SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

THE MINES AND WORKS OF GERMANY—No. II.

ORE DRESSING.

There are two centres for ore dressing and smelting in Germany—the Erzgebirge in Saxony, and the Hartzgebirge in Central Germany. In South Germany the whole range of hills from near Zwickau to Dresden is completely honeycombed for silver, lead, arsenic, copper, iron, coal, antimony, cobalt, and nickel. The name, indeed, signifies ore mountains, and the lower valleys are dotted over with dressing-floors and smelting-works, whose presence is betrayed from a considerable distance, by the blue cloud of smoke continually ascending. Throughout the regions of the Oberharz and Unterharz the same kind of operations are carried on. Most of the ores of the Hartz are sulphides, and, in fact, some of them contain besides a quantity of free sulphur; and at Nordhausen the strongest of these sulphides are used in the manufacture of the fuming sulphuric acid known throughout the world as Nordhausen vitriol. Its manufacture is different from the ordinary process, as used in England, consisting of direct distillation from the richest sulphides. The ordinary sulphuric acid is also made from iron and copper pyrites, and much of what is thrown away in English iron and coal mines is, in Germany by this means made a source of profit.

Near Nordhausen we visited some smelting-works, but as most of the ores there treated were imported from Mexico and elsewhere partially dressed, we shall, to avoid repetition, begin by describing the processes as carried on at Goslar, Frederickshutte, and the Klausthal works. From the extraordinary amount of sulphur contained in the ores at Rammelsberg, a preliminary operation is there resorted to previous to the ordinary dressing—viz., roasting, to expel the sulphur. This is effected very much in the manner in which, until three or four years ago, the calcining of iron ores was carried on at the smaller works in South Staffordshire. A large heap of ore is piled on the ground in pyramidal masses, with a slight mixture of wood, and so great is the quantity of combined and free sulphur, that we were told, when the mass had been fairly ignited by means of the wood, it would burn for weeks, fed by its own sulphur, which gradually works out at the top into holes made by the workmen, and thus the pile continues to sweat sometimes for two or three months. This calcining process is adopted also for other ores, after dressing, as at Silberhutte, near Andreasburg, but then it is conducted in close kilns.

The gross value of the minerals as they come from the mine was variously estimated by different managers, and, in fact, the value is constantly varying from time to time. Hand-picking was extensively employed in the works, though we found that some of the miners held to the opinion that it would be better to pass the whole through the dressing-floors, and while in the mines to tumble the whole ores, good and bad together, down the shafts to the wagons. They alleged that whatever pounding or knocking the good pieces may undergo, the loss would all be caught up in the various operations of the dressing floors. An example of this came under our notice lately in the Helvellyn Lead Mine, in Cumberland. At one time the whole of the ores were tumbled down a badly driven shaft of some 40 yards, and went crashing and dashing from side to side with terrific noise, to be afterwards run out in wagons to the crushing mill. Now, on analysing the mud at the bottom of this shaft we found it to contain nearly 6 per cent. of galena, whilst the value of the entire breadth of the vein was not more than 2¼ per cent. The ore in this vein being of so friable a nature, it was determined to secure the purer specimens at once, and transfer them to the ore-house, and by this means a great saving was effected. The same principle applies to the dressing-floor. The expense of breaking with hammers and hand-picking is but a small proportion of the expenses of dressing, and with the hand-picked portions directly conveyed to the ore-house, there is no further risk of loss. The refuse from the hand-picking, or the ores not worth that operation, are next passed through a hopper, and crushed between fluted rollers, and immediately underneath, still further ground by two other pairs of rolls, upon which the material drops. These first rolls are fitted with the ordinary moveable centre, to allow the passage of occasional lumps, too hard to be crushed, lest they should snap the machinery. The produce of the crushing mills is arranged according to size, by passing through a nearly horizontal revolving cylinder, perforated with holes of a given size. The pulverised ore is received into the interior of this cylinder, the finer particles pass through, whilst the coarser portions are gradually turned out at the lower end. In one dressing works at Moresnet we observed at this stage a second hand-picking. The lower end of each cylinder emptied its contents on to a revolving iron table when the barren pieces were picked off by girls as fast as they appeared, and the other portions were swept off by a fixed arm, as the tables gradually turned, and were received by an elevator, to be carried up to the crushing mill again. The small matters that had passed through the cylinder are next hurried along by a stream of water to the stamps for fine crushing. Here the orey particles are subjected to the repeated blows of iron stamps, which effectually pulverise the mineral. This fine powder next passes to the sets or jigging machines, consisting generally of an oblong box, with a fine wire bottom, suspended in a somewhat larger trough of water, from a revolving shaft, and so attached by a cam as to produce, on the revolution of the shaft, a peculiar jerking motion of the box. In the older works the Setz machine is jerked by being suspended from a lever, the other end of which rests on a very coarse cog-wheel, but most of the modern works have adopted the eccentric cam. These shaking tables are arranged in rows. In one work we found 14 such machines, all working on the same shaft, but so arranged with cams of varying degrees of eccentricity that, beginning at one end, the degree of agitation became less and less, till at the other end it was only slightly perceptible. The orey matters by this constant jerking tend to arrange themselves in layers in the Setz machine in the order of their specific gravity—when we find the ore at the bottom, a mixture of ore and barytes generally next, and the lighter stone on the top. These machines are each furnished with a catch, to lift them up about eight inches, and throw them out of gear, while the dresser dexterously scrapes off the top layer with a piece of steel, and throws aside as refuse; the second layer, to be passed into the next machine, and the lowest portion to another machine, or to the ore heap according to its purity. In the water-box wherein the Setz machine is suspended a considerable quantity of fine slimy ore accumulates, known in England as smiddim ore. This is from time to time removed to the ore-house, and is generally sampled separately, as being not so pure as the ordinary ore from the jigging-tables. These operations are substantially the same for lead, zinc, tin, copper, and antimony, varying only in the minor particulars.

Owing to the extreme divisibility of galena and other ores, a most astonishing quantity of mineral escapes from these various operations, carried off by the water. After the utmost care had been taken to recover the small particles from the waste waters, we found, on examining the brook near Königsberg, into which stream several lead-works turned their waste waters, that the gravel and sand were everywhere largely intermixed with galena, in a state of minute subdivision. To prevent, as far as possible, this loss, the dirty water from the jigging-machines is run over the German buddle, consisting of a slightly inclined plane 14 feet long and 6 broad, with occasional strips of wood or leather across to retard the flow of water. The orey water is turned on at the top, and in its descent leaves the chief portion of the ore at the upper end, while the lighter matters float towards the bottom. These are duly swept off by boys or women, and transferred to another buddle, to be still further purified till fit for the ore house. The round buddle was only rarely seen. They have both kinds in operation at Klausthal works, but the old German buddle was very much more common. The arrangement of this last seemed to us defective, as they were usually placed side by side to the number of 10 or 12 in a row, with no provision for the waste water of one flowing on to the next buddle, placed on a lower level; this, however, was the case we observed in one place, at Sieber. But, in the matter of buddles, we saw no works that surpassed, in the excellence of the arrangement and in the economy of labour and water, the dressing-floors of the famous Greenside Mines in Cumberland. The refuse waters from the German buddle run into a series of slime pits to settle. These pits are occasionally emptied, and the mud treated on the buddles as before. They were generally arranged better than in our English mines. At Sieberthal they consisted of 18 pits, in rows of six each, communicating in such manner that the water must flow along through the first six, then back through the next row, and so on through the whole. Each pit was 6 ft. by 4 ft. and 2 ft. deep. Towards the end of the series the pits were made larger, causing the flow of water to be slower.

The degree of purity to which the ores were brought of course varied in different works. At the Royal Clausthal dressing-works the galena was dressed up to 75 per cent., and when we consider that part of this is hand-picked, and part smiddim ore, the percentage is seen to be very good. In our English works 68 per cent. is a common standard; the exact theoretical quantity of metal in sulphide of lead being 86 per cent. In the zinc-works, near Aachen, the dressing of the ores is carried to 39 per cent., the theoretic value of carbonate of zinc being 50 per cent. metal.

In many places we found no inconsiderable quantity of the ores was obtained from the refuse heaps of past workings, which now, with improved dressing apparatus, will yield profitable returns.

IRONWORKS AND COLLIERIES IN YORKSHIRE—No. II.

THE HOLMES COLLIERY, MASBRO'.

ECONOMICAL MODE OF PUMPING WATER IN PITS TO A HIGH ALTITUDE.

The Holmes, which simply means low diluvial meadows, joins both Masbro' and Rotherham, and is one of the most celebrated spots in connection with the heavy iron trade in Yorkshire. Here was founded, by the Messrs. Walker, in 1746, the vast ironworks with which their name was so long associated, and where the greater part of the heavy cannon used by the English forces during the wars of the French revolution were cast. The ironwork for Southwark Bridge, erected by Mr. Rennie in 1818, the centre arch of which consisted of 1600 tons, was also cast at the Holmes, and was set up in a field close to the works. Since those days, however, both Rotherham and Masbro' have made rapid progress, and have now some very large works in almost every branch of the iron trade, as well as probably the largest brass foundry in the kingdom—that of the well-known firm of Guest and Chrimes.

The Holmes Colliery, one of the best laid out in the South Yorkshire district, is only about 400 yards from the Masbro' station of the Midland Railway, and is admirably placed for doing a very large business, one side of it resting on the Midland line, and the other on the Manchester, Sheffield, and Lincolnshire, whilst the canal to which the coal is run from the top lies between the two. There are, consequently, three ways of exit for the produce of the mine, which belongs to a limited company, of which Mr. Bolland is the chairman. There are three shafts, one for drawing, the other for ventilating, or upcast, and the pumping-shaft. The drawing-shaft is 12 ft. in diameter, and bricked, the depth from the surface to the coal being 350 yards. The seam worked is that known as the Barnsley, but in some essentials differs from that bed as found in most other places, not being quite so thick as in other parts of the district, but being mostly hard or steam coal of a very superior quality. The bed is about 5 ft. thick, 3 ft. 8 in. being "hards," but there is a bottom bed of "softs" (between which and the top coal there is a band of dirt about 1 ft. thick), which is not worked. In working to the rise a very heavy "throw" was encountered, so that getting the coal in that direction was abandoned, and it is now gotten to the dip, from which it is drawn by machinery worked by compressed air. At the pit bottom there is an 18-in. cylinder engine, with three boilers, while a fourth is about to be put down, which draws the corves along the plane. Further on, about 1200 yards from the bottom of the shaft, there is a compressed air-engine working a level about three-quarters of a mile in extent, whilst a second one is now being made by Pigott and Farrar, of Barnsley, to be placed about 400 yards in advance of the former, for the purpose of working the parallel level. The compressed air-engine also works a "tail"-rope, on the main tail rope principle, about 1½ mile in length, drawing 22 corves at a time, each containing half a ton of coal, by means of a round wire-rope, ⅝ in. in thickness. The mode of working is that generally known as "following-up banks," pillars being left in the first instance, but afterwards taken away. The ventilation is by means of the furnace, and the mode of carrying it out is on an extensive scale. There are four furnaces about 70 yards from the pit bottom, the grates being about 5 ft. in width by 6 ft. in length; the quantity of air passing through the workings and feeding the fires being about 200,000 ft. per minute, a quantity, it may be said, considerably more than is required for rendering the gas produced powerless. The bottom of the pit is lighted with gas to the extent of 400 yards along the level.

The arrangements at the top are all that could be desired for effectually conducting the work connected with a large colliery, and shooting the coal into wagons as fast as it is brought to the bank. The head-gearing is of a massive character, 60 feet from the surface, the pulley wheels being 13 feet in diameter. The coal is well separated before being passed into the wagons, for which purpose there are about a dozen screens. The cages are double-decked, drawing at each lift four corves, each containing 10 cwt. of coal, the time occupied in lifting from the bottom to the surface being 30 seconds. All the machinery is in excellent condition, that for drawing consisting of a pair of 42-inch cylinder engines, 5-feet stroke, the diameter of the drum being 17 feet, and working a round wire-rope 5¼ inches in circumference. One of the engine is by Davey Brothers, of Sheffield, and the other by Nelson, of Wakefield. The compressed air is sent down to the engine at the bottom of the pit in pipes 7 inches in diameter, the air being compressed by means of a pair of 18-inch steam cylinders, with 38-feet stroke, the compressed air cylinders in connection with them being 20 inches. The steam power is obtained from 11 boilers, each about 40 feet in length, six of them are tubular, by Jenkins, of Rotherham, and the other five are egg-boilers by the same maker. Both the upcast and pumping shafts are of the same diameter as the downcast, 12 feet. The pumping engine consists of a pair of 17-inch cylinders, Sims's patent, with compound action, two pistons acting with one rod, with a 9-ft. stroke. There are three lifts with two rams, 16 ins. in diameter, two rams in a bucket. Close to the pit bank there is a large carpenters' shop, where the corves are made, and the ordinary work of the colliery executed. There are also other shops for the smiths, pick sharpening, mortar grinding, &c.

The colliery finds employment for about 700 persons, the out-put of coal being about 5000 tons a week. Everything, we may say, is done to ensure the comfort and safety of the workmen; no expense being spared in the introduction of all appliances and improvements calculated to attain those objects. The underground viewer is Mr. T. W. Jeffcock, of Sheffield, a gentleman well known in connection with several colleries in South Yorkshire and Derbyshire, and he is ably seconded by his deputy, Mr. G. W. Minto, late of the Oaks Colliery.

The pumping machinery at the Holmes Colliery is of an exceptional character, and was laid down under the superintendence of our friend Mr. P. Cooper. From an able paper by him on the subject we are enabled to give some particulars. He commences by stating that by the mode adopted the water is forced to a greater altitude than has hitherto been attempted. Several years ago the colliery was won by three shafts, two to the Barnsley bed and the other only to the Wathwood bed, to be used as a pumping shaft. The principal pumping arrangements being in a shaft not sunk to the bed in course of being worked, it was necessary to raise the water by the winding-engine in large cisterns holding 400 gallons each, which occupied about 20 hours per week. This was found in many ways unsatisfactory, and it was decided to prepare independent and reliable means of pumping the water from the Barnsley to the Wathwood level. A double horizontal engine, with 18-in. cylinder, was erected in the Barnsley bed for hauling the coal on the levels and from the dip. The engine had attached to the back end of each cylinder a force-pump, by which the water is forced to the Wathwood bed. In haul-coal or pumping water the engine is usually supplied with steam from three boilers, also erected in the pit.

The engines consisted of two cylinders, 1 feet 6 in. in diameter, 3-feet stroke; the diameter of the piston rod being 3 in. at front end of the cylinders, and 2 in. at back of cylinders; length of connecting rod, 8 feet; steam ports, 12 in. by ⅞ in., and exhaust ports, 12 in. by 1¼ in. There were a pair of double-acting cast-iron force pumps, 3-feet stroke, diameter of pumps, 4 in., and of valves 4½ in. Each pump has two small air vessels of the capacity of about 1 cubic foot each. From pumps to delivery pipe end in Wathwood bed is 233 yards. The pumps are placed 84 yards from the bottom of the shaft, and the vertical height the water is forced is 540 ft., or 180 yards. The pipes have a special arrangement for raising them a few inches, in case of the failure of a pipe or joint. At intervals of 20 yards a pipe is inserted, having two sets of brackets cast on it, with their flat faces downwards.

The engine worked well at 40 strokes per minute, at which velocity the water delivered was fully equal to that calculated upon—228·4 gallons per minute—the velocity of the pistons and plungers being 240 feet per minute, the velocity of the water in the discharge pipe 188·52 feet per minute, and the mean pressure on the pumps 275 lbs. per square inch. Sometimes the indicator oscillated to a great extent; by partially closing the tap in communication with the pipe the indicator became almost steady. The statistical pressure, as indicated by the pressure guage, was 250·25 lbs., and by calculation 234·37 lbs. to the square inch. The advantages of this mode of pumping are—saving of capital, cost of engine and boilers, capability of the pipes being placed in a very small space in the shaft, not requiring pump rods, and great economy in the case of winding water, which is very injurious to steel or iron ropes, and also great economy in raising the water itself. They also do away with the necessity of having the shaft occupied with water-drawing every night, or at longer intervals, and prevent the damage to the shaft and conductors arising from the waste of water. The cost of raising water in this case, for coals, enginemen, and firemen's wages, is about 1-12th of a penny per ton. The water was found to be very injurious to steel ropes, the analysis showing—specific gravity at 60° Fah., 1·0823; amount of fixed ingredients in the imperial gallon, 8557·5 grs., the weight of 1 gallon of water being 75·761 grs. Mr. Cooper gives some very interesting tables as to the water taken from the Holmes, the English Channel, and the Mediterranean. The analysis of the Holmes water gives, for every 1000 grs., as follows:—Water, 887·494 grs.; chloride of sodium (common salt), 76,890 grs.; chloride of magnesium, 5·480 grs.; chloride of calcium (lime), 30·050 grs.; precipitate

formed by boiling, insoluble in water, consisting of oxide of iron, lime, and magnesia, 0·086 grs.

Of the water of the English Channel, as given by Dr. Schweitzer, for 1000 grains there are—Water, 964·74372 grains; chloride of sodium, 27·05948 grains; chloride of magnesium, 3·66658 grains; chloride of potassium, 0·76552 grains; bromide of magnesium, 0·02929 grains; sulphate of magnesia, 2·29578 grains; sulphate of lime, 1·40662 grains; and carbonate of lime, 0·03301 grains. Of the water of the Mediterranean Sea for every 1000 grains there was—Water, 959·06 grains; chloride of sodium, 27·22 grains; sulphate of magnesia (Epsom salt), 7·02 grains; sulphate of lime, 0·15 grains; carbonate of lime, 0·09 grains; carbonate of magnesia, 0·11 grains; carbonic acid, 0·20 grains; potash, 0·01 grains. The few facts we have given relative to the pumping machinery at the Holmes will be found worthy of the consideration of all engaged in mining operations, and much credit we think is due to Mr. Cooper for the great attention he gave to such an important matter.

INCREASING PRICE OF COAL—A REMEDY.

SIR,—We are threatened (at least) with coal to rise to 3*l.* per ton during the coming winter months in London, Welsh coal is to cost householders this price, if not more. Now, what we require in our houses, is a coal which will cook the dinner, and give some warmth. I speak of the masses generally. In Pennsylvania and other states of America we hear of unlimited coal fields as large as the area of England herself, and I believe recently discovered. Nothing prevents our active-minded enterprising cousins from importing Coolie labour into the coal districts in question to work the vast mines. The cost of labour will be nominal. I have visited the far east and west myself, and am pretty well acquainted with the labour markets. It has been stated that this coal can be landed in England at from 13s. to 15s. per ton net. These abominable strikes would thus receive a salutary check, and bring a just retribution on the extortioners themselves.

The best coal would only be required by steam-engines, railways, and steam-vessels—the two latter must raise their fares for a time; but less coal will be required, and the men caught in their own net. Undoubtedly inferior coal in the parlour is objectionable, and chokes the grate with dust. Perhaps, however, some of your enlightened readers can tell us more about this American coal and its merits. Some have praised it. The matter, however, needs immediate consideration, and public attention. Americans may peruse this letter, and see an immediate fortune at hand. I hope so for our sake, especially for the poor in our great cities. H. P. B.

Truro, July 24.

PANULCILLO COPPER MINES, CHILI.

SIR,—As the time for making up the year's accounts of the Panulcillo Copper Mines Company approaches the result of the year's operations are looked forward to with interest. For the year ending June 30, 1871, a net profit was shown of 2185*l.* 18s. 6d., and this included a period during which copper was at the lowest price ever known; since that time the price of copper has risen 30*l.* per ton, with every prospect of still advancing; this will make an important increase in the returns from the copper sold, the average of which is 3000 tons per annum, the difference being equal to a sum of 90,000*l.*, or a dividend of 45 per cent. on the total capital of the company (50,000 shares of 4*l.* each, fully paid).

In a very interesting article in the "Quarterly Review of Science" for April, "On the Copper Mines of Chili," by Mr. James Douglas, he alludes to the Panulcillo works and the satisfactory manner in which they are conducted. He says the management in every department of the establishment is admirable, and had the same economy and prudence reigned in days gone by, when the copper was better and the yield of the ore higher, immense profits, instead of heavy losses, would have been made. As it is, even in the past depressed state of the market, under the present superintendence, the mine has held its own, and now should make most profitable returns. It is the only property in Chili worked by an English joint-stock company, with an office in England, and though it at one time suffered from the absence of that close scrutiny which is generally exercised where a property is only under the eye of its owners, *now*, with Mr. Heatley in Valparaiso, and Mr. Weir at the mine, and a good price for copper, the enterprise ought to take a new lease of life.

The *Lambert* process, introduced into the smelting of this company's ores, effects a very large saving in fuel and labour. Ten large reverberatories and four blast furnaces were erected last year, and each reverberatory smelts three charges daily of 90 cwts. each, and produces a 45 per cent. matt, with the consumption of 1 ton only of coal to 3·5 of ore, a comparison of which with other large smelting establishments on the coast bears very favourably indeed. Some slight interruption in the working was occasioned a few months back by the failure of the coal supply from the Chili miners, and by overdue arrivals of coal from England, but by last accounts these difficulties have been overcome by supplies.

July. AN OLD SUBSCRIBER.

MINING v. RAILWAY AND OTHER SPECULATIONS,

SIR,—I have read with great pleasure the very able letters on the above subject from Mr. Thomas Spargo, and I venture to express the hope that No. 3, which I have read to-day, will not be the last. Mr. Spargo has already done much towards assisting legitimate mining in this country, his book on "The Mines of Cornwall and Devon" is the most accurately compiled work I have ever read on the subject, and should be bought by every one interested in our home mines.

I am quite certain that thousands of pounds are lost yearly through the careless and incompetent manner in which mines are frequently inspected, and I believe the greater portion of these losses fall upon the small investors, who are generally more easily led away by the promise of large profits.

I read your valuable Journal regularly, and have frequently noticed the ease with which companies promising enormous profits without any risk are floated, the public rushing madly after shares at very high premiums. Some of these companies, after spending large sums of money in office work in London, commence operations in erecting splendid machinery for crushing ores before any have been discovered, and then engage the services of some mining captain totally unacquainted with the district, who spends the remainder of the capital in driving after a lode that does not exist except in the imagination of the promoters.

Others commence working under more favourable circumstances, and continue for some time to send most encouraging reports of improvements in the value of the various lodes, together with the opinions of old men who worked in the mine 40 or 50 years ago. In this case the shares go up to a premium, which as a general rule may be said to be great or small in proportion to the age of the old men; gradually the reports are shorter and more vague, until the shareholders get impatient, and some few of the most restless write letters to the secretary to ask what is being done at the mine, and when the annual meeting will be held. After some delay the meeting takes place. The chairman, after expressing his regret at not being able to present a more favourable report, makes a long speech, in the course of which he tells his fellow-shareholders that the engine-shaft which they have put down from surface to the 50 fm. level, and driven from east and west every 10 fms., should have been 500 yds. further north. In addition to this he reminds his hearers that the Great Wheal Dead Weight, which has paid splendid dividends for the last 10 years, did not reach paying ground until they had driven their 100 fm. level. The statement of accounts shows that after paying for the mine the company had a working capital of 6000*l.*, of this 5900*l.* been spent in machinery and sinking the shaft, &c. Now, most likely the set is a really valuable one, and had the directors commenced sinking to work the known deep and valuable lodes with a capital of (say) 10,000*l.* or 12,000*l.*, the company would in time have been a great success. As it is, most of the shareholders are thoroughly disgusted, and will not subscribe another farthing. The company is wound-up, and another set of shareholders got together, who reap the advantage of all the work that has been done.

It is truly surprising that people will invest their money in Bogus Companies such as I have described, which are in many cases only got up to suit stock jobbing purposes, and are, therefore, left without any working capital, or only sufficient to carry out half the necessary work, and yet pass by really sound and valuable undertakings. I have had some experience in mining, and am fully convinced there is no field of British enterprise that can compare with it when properly conducted; but I would caution all persons against entering into any adventure without first consulting some really competent agent or broker.

I should not have troubled you, Mr. Editor, with these remarks, as I know there are many better qualified to do justice to the subject than I am; but at the present time there are so many new companies brought before the public week by week, and a large portion of these, I fear, will only enrich the promoters, that I wish to caution my fellow-readers against entering rashly into anything which will not bear the strictest professional investigation; and I do this because in times past I have more than once been the victim of my own judgment.—*Worksop, July 22.* JOHN SHERWOOD.

HEMATITE IRON ORE.

SIR,—This mineral has recently been found in immense quantities in the county of Cornwall; in some places it is of very high percentage, free from sulphur, phosphorus, and any other bad ingredient. Extensive operations are being carried on in various parts of the county; but situation has much to do with the profits of these operations. The future success in such pursuits will be principally owing to railways opening up certain districts, previously very costly to work, owing to the high rate of carriage; and when the price of ore was 100 per cent. less than at present the demand for iron ore was not 1-10th part so great as at this time.

One of the greatest discoveries of the red and brown hematite iron ore was recently made a few miles from St. Austell, and leased to Mr. A. Bennett, who has paid great attention for several years to the discovery of rich lodes, not only in Cornwall, but also in the Principality of Wales. These deposits appear to be in increased quantities, and of the highest quality, and offer every facility for shipment to any extent. The carriage from the mines to the shipping port will be about 2s. 6d. per ton. Samples of the ore gave by assay 55 to 56 per cent., and free from sulphur.—*July 22.* READER.

PROFITS FROM IRON MINES.

SIR,—We have heard from time to time of considerable profits having been derived from Cornish mining, and from mining in other provinces for tin, copper, silver, gold, and lead; and how some men who were poor have been made wealthy; but what are those profits when compared to the profits derived from some iron mines in Cumberland? Inconsiderable. When I was there a few days ago a friend informed me that the *profit* on the red hematite works belonging to Mr. Stirling amounts to 312,000*l.* per annum—that is to say, he sends to the smelter 1000 tons per day, over a railway passing through the mines, the clear profit on it being 1*l.* per ton. My friend also said that from the works of Messrs. Lindo and Co., at Cleator, a profit of 100,000*l.* per annum is made; Parkside Mining Company the like; Sherwin, Moor, and Brown, 60,000*l.* per annum profit; and that Hadbarrow Mine in East Cumberland, yields 5000 tons per week, with a profit of 1*l.* per ton, 260,000*l.* per annum. It is to be hoped that men having the power which money confers on its possessors will make a right use of it. "Money is power" as well as knowledge, but the two powers are not always combined in the same person.

Considering the immense advantages of iron mining we cannot be surprised at the eagerness with which miners and others are searching after iron lodes in Cornwall and elsewhere. Iron setts fetch good prices now, and in consequence of the diligent searching many lodes have been discovered. I observed that the produce of the Cumberland ore is greater than that commonly raised in Cornwall. I mean the percentage of the metal in the ore. The ore raised in the mines visited by me in Cumberland yields about 65 per cent. of metal, used, I was told, in the manufacture of steel rails. It is believed that steel rails will, in process of time, supersede the common iron ones. My friend gave me an anecdote which is not creditable to our Hibernian neighbours. He said that one of the iron mine proprietors in Cumberland had an objection to the employment of Irishmen in his mine, probably because they are so prone to quarrel with Englishmen, conflicts being very common between them at public-houses, often on religious grounds. Irishmen are more ready to *fight* for their religion than to practise its precepts. Irishmen have a method of gaining their ends which we Englishmen have never adopted. "All that a man hath will he give for his life." They, therefore, threaten to take *that*, but they are so kind as to give notice of their intention, and tell their intended victims, sometimes, to prepare his coffin! In the present case two or three Irishmen met the proprietor on a dark night, and told him that "if he did not employ Irishmen he would be shot." A few days afterwards a small number of them presented themselves at the mine and asked for work, which was granted, and now I find that hundreds of them are employed there. The threat prevailed, or so it appears. One does not like to be shot.—*Truro, July 22.* R. SYMONS.

THE WHITEHAVEN IRON MINES (LIMITED).

In my Cumberland tour, amongst the mines visited by me were those belonging to the above company. Being about to review the mines in West Cumberland, I shall commence with Eskdale and Floutern Tarn, which belong to them; because of these mines, amongst others, I have a good opinion; and I should like to state the grounds on which my opinion is founded. I hope to send to you, for the next week's Journal, something for insertion.

July 24. R. SYMONS.

NEW ROSEWARNE.

SIR,—To sink shafts, drive levels, discover lodes, and open out ground—to make a mine, in fact—requires so much time and money in the ordinary course of mining, that the rapid success of New Rosewarne in little more than 12 months seems almost beyond belief, and, in fact, has scarcely been believed at all by those who have been ignorant of the exceptional circumstances attending it. And it is to these exceptional circumstances that I would call the attention of your readers. From the year 1855 to 1862 Rosewarne was worked as a copper mine, and paid large dividends. The returns of copper altogether amounted to about 100,000*l.* To work the mine for copper three shafts were sunk; the engine-shaft 74 fms. deep; Bickford's, 94 fms.; and Pool's 58 fms.; and numbers of levels were driven communicating with each. By the side of the copper there was tin, and from the 74 to the 94 at Bickford's about 7000*l.* worth was taken away with the copper and sold in the stone; but tin was then only 45*l.* per ton, and it did not pay to work it; and as the mine became very poor for copper it was abandoned, leaving the tin standing at the different levels.

When tin rose to 80*l.* per ton the attention of the promoters of the present company was called to the tin known to be *laid open* in the mine *by those who last worked in it;* and a new lease was obtained of the setts. On the engine-shaft there is now a 70-inch cylinder steam-engine for pumping, and this commands the three shafts; so far as the water has been pumped out, the statements of the old workers have been verified at all points, while around Pool shaft one of the richest deposits of tin discovered in Cornwall for many years has been met with, and this, during the last four months, has opened out 5000*l.* worth of tin, independent of 8 tons sold and 15 tons lying on the mine. At present the deepest level drained is the 74. In about two months' time Bickford's shaft will be drained to the 94; and in the bottom Capt. James, the present agent (he was also the last agent who inspected it under the working for copper), says there is a lode worth at the present price of tin 30*l.* per fathom, and he considers the ore standing in the old workings, with the new discovery, may be estimated at 25,000*l.* to 30,000*l.*

When the rich discovery at Pool shaft, worth over 200*l.* per fathom, was found that the market considered it to be too good to be true; and a report was circulated, to get down the price of shares, that the tin was wolfram. Upon this Capt. Josiah Thomas, of Dolcoath, was sent to inspect the mine; he took samples from every point, assayed them himself, and confirmed all the valuations of the agents for tin.

The exceptional circumstances, therefore, attending New Rosewarne, and which takes it out of the pale of ordinary mining speculations, are these—

1.—The shafts sunk and levels driven cannot have cost the old company less than 20,000*l.*, and they are now available, free of cost, for the present company.

2.—Instead of having to search for tin as in ordinary mining, it is known to be standing in the different levels, independent of the great discovery at Pool's shaft.

3.—To return this tin, 9 tons of which have already been sold, some as high as 96*l.* per ton, a pair of pneumatic stamps will be put to work in August, and another pair has been ordered. One pair, the agent says, is calculated to return 16 tons of tin per month. The pair would return, therefore, 32 tons, worth (say) 2880*l.*, and this may be got at a cost of 1000*l.* to 1500*l.* per month.

4. The engine is capable of driving four pairs of these stamps.

I have thus endeavoured to lay before you a few facts, founded upon the agent's reports, and with a view to show that, in my opinion at least, there is nothing like New Rosewarne, as a speculation, in Cornwall.

It is understood, though, that another call may be necessary to make a "clear book" at the October meeting, and then the agent has promised to commence dividends in January. ARGUS.

THE GREAT LAXEY STRIKE.

SIR,—With reference to the circular letter to the shareholders published in your last issue, and purporting to have emanated from "The Laxey Miners on Strike," I hasten to repudiate the whole of the statements made therein respecting fictitious names in the cost-sheet, and beg to state most emphatically that those accusations have no foundation whatever, in fact. R. ROWE.

Laxey, July 23.

ABERYSTWITH (SILVER-LEAD) MINING COMPANY.

SIR,—Having received applications from various shareholders relative to the position and prospects of these mines since the formation of the present company, I consider my best plan will be to reply through the *Mining Journal*, that those who are interested may know how the mines progress.

Since June 8, when the company entered on possession of these mines, we have cleared up and secured the Penrhiw engine-shaft to the 46 fm. level, which is the deep adit level; this shaft is 20 fms. under the adit level. We are busy preparing for drawing the water out by dropping our pitwork, fixing rods, bobs, &c., so as to enable us to go deeper, when, according to the best authorities, a good and lasting mine will be met with; in fact, the upper sections of the mine and the composition of the lodes almost warrant this. I trust in another three weeks to see our two large wheels at work, drawing, pumping, and crushing, for although we have been at work only a few weeks we can soon send a parcel of ore to market of 50 tons. Seldom a mine has opened up so well in so short a period. The 36, west of Penrhiw shaft, is in a lode 5 ft. wide, yielding 1 ton of lead ore per fathom; a more promising lode for a successful future cannot be seen. From this level we have just effected a communication with a winze sunk under the 26; by this means our mine is well ventilated, and it has enabled us to work two stopes by six miners, in each. The ore ground which we have driven through in the 36 is about 15 fathoms, and for 10 fathoms high, and my calculation is that we have in this block upwards of 100 tons of ore. The mines at every point look cheering, and I can with every confidence say it is a property the value of which has not been estimated at near its worth. As soon as these stopes are high enough to put in stulls we shall at once begin the sinking of a winze under the 36, and in a lode worth fully 1 ton of ore per fathom. By this means we shall most certainly prove that the major part of the levels and winzes have been driven and sunk in the country, and not on the lode; we have proved this assertion so far.

Greater encouragement to the shareholders for the future than the working of these mines it has seldom been my lot to report on, the more so as the results obtained will not be affected by the high price of coals, the mines being in this exceptionably advantageous position, that we have *ample water-power for all our purposes*, and I believe as they are developed it will be made manifest to those interested.—*July 25.* JOHN TREVETHAN.

THE SCIENCE OF INVESTMENTS.

SIR,—In looking over the columns of the "Money Market Review," July 20, I observe that not a single transaction is recorded in British mines for the past week, nor more than seven out of the thirty-nine foreign mines included in the colonial and foreign list, four of which are quoted at heavy discounts, and only one—the Cape Copper—at a premium. It is, therefore, manifest that the Stock Exchange is not the medium through which mine shares change hands. In the case of telegraph companies only three out of seventeen are quoted, two of which stand at 25 per cent. discount. Joint-stock banks, on the contrary, have been generally dealt in, and the shares with few exceptions command premiums ranging from 10 to 250 per cent. on the capital paid up. This demand springs from two causes—the sound position of the trade, manufacture, and commerce of the country and the satisfactory half-yearly dividends. Waterworks shares are quoted ex div., which make the prices appear cheap; they yield investors over 5 per cent.; the security is undoubted, as whatever luxuries the community can do without water is indispensible as one of the first necessaries of life. Gas shares have been freely offered, and prices have given way. The rise in the price of coal and iron has induced the timid to realise. The foreign stock market is exceedingly heavy, which the unhappy fall in Honduras bonds tends to still further weaken:—

Argentine, 6 per cent., sells at 9 to 10 per cent. discount.
Bolivia, 6 per cent. scrip, sells at 43 to 44 per cent. discount.
Brazilian, 4½ per cent., sells at 14 per cent. discount.
ditto 5 per cent., sells at 5 to 6 per cent. discount.
Buenos Ayres, 6 per cent., at 5 to 7 per cent. discount.
Costa Rica, 6 per cent., at 37 per cent. discount.
Danubian, 7 per cent., at 8 per cent. discount.
Egyptian, 7 per cent. (1868), at 13 per cent. discount.
French, 6 per cent., at 1½ to 2½ per cent. discount.
Honduras, 10 per cent., at 62 to 68 per cent. discount.
Hungarian, 5 per cent., at 16 per cent. discount.
Italian, 3 per cent., at 34 per cent. discount.
Mexican, 3 per cent., at 85 per cent. discount.
New Granada, 3 per cent., at 63 per cent. discount.
Paraguay, 8 per cent., at 27 to 30 per cent. discount.
Peruvian, 6 per cent., at 24 to 25 per cent. discount.
Portuguese, 3 per cent., at 58 to 59 discount.
Russian, 5 per cent., at 5¼ to 7½ per cent. discount.
Sardinian, 5 per cent., at 22 per cent. discount.
Spanish, 3 per cent., at 71½ per cent. discount.
Turkish, 6 per cent., at 28½ per cent. discount.
ditto, 5 per cent., at 49 per cent. discount.
Venezuela, 6 per cent., at 83 per cent. discount.
On the contrary,
Chilian, 7 per cent., command 3 to 5 premium.
Japan, 9 per cent., command 9 to 11 premium.
Russian, 5 per cent. scrip (35*l.* paid), command 2 premium.

There is a wide range for selection of good paying stocks in the above list, but I doubt much if the security is better than many of our Cornish tin mines, as, for example, Dolcoath was a good dividend mine at the commencement of the present century, and it is as rich at the present time as at any former epoch in its history. Tincroft is making profits of 1000*l.* per week, and has existed for the past 40 years. Carn Brea was a good mine 37 to 40 years ago, as was also Cook's Kitchen, East Pool, North Roskear, Seton, Botallack, Great Vor, Levant, Mary Ann, St. Ives Consols, Mary, Margaret, Kitty (St. Agnes), Basset, South Frances, and many other adventures that have rewarded the enterprising miner in his slow, though patient and enduring, march for the hidden wealth which renders Cornwall so famous and remarkable for its yield of mineral ores.

There is probably no investment so profitable as well selected Cornish tin mines, yet the public, in buying shares, generally disobey all the ordinary precautions necessary to a judicious choice. Can anyone understand the principle that guides an investor in buying Grenville shares at 50,000*l.* for the mine, Treleigh Wood at 150,000*l.*, Penstruthal United at 100,000*l.*, Van at 700,000*l.*, South Condurrow at 37,000*l.*, West Basset at 66,000*l.*, East Llangynog at 200,000*l.*, and

Roman Gravels at 200,000*l.* when Herodsfoot Mine sells at only 35,000*l.*, Botallack at 45,000*l.*, Margaret at 20,000*l.*, Providence at 32,500*l.*, Basset at 55,000*l.*, South Caradon at 110,000*l.*, Wheal Mount at 6000*l.*, North Levant at 32,000*l.*, Wheal Owles at 30,000*l.*, South Caradon at 125,000*l.*, North Pool at 10,000*l.*, West Tolgus at 30,000*l.*, Seton at 15,000*l.*, or New Hingston at 12,000*l.*? The science of investments, to be of use and practical in application, must be searching and earnest in investigating the merits of all and every undertaking, so that the character and value of prospective success be thoroughly understood and appreciated.

In mines, as in foreign stocks, rapid and wide fluctuations frequently take place in their market value, but sudden depreciation in the value of mines is generally attributable to the conduct of shareholders themselves, who too frequently rush headlong into the market to realise at whatever can be obtained from speculative jobbers in the absence of *bona fide* or legitimate buyers. This truth is exemplified almost daily, as many who embark in mines are often as timid as they are rash—as easily frightened out of their property as they were attracted to it; they purchase without judgment, and realise without cause or reason. The cooler investor acts with deliberation, and realises at advantage when the market is ripe, and the pioneer points of operation realised, and usually with success; still, patience and reflection are indispensable. Investigating narrowly, they rely with firmness on the business done, and stand the shock of all adverse reports and rumours unmoved. But when a man who has bought a share about which he knows nothing, who only enquires as to the rate of interest it has hitherto paid, or the speculative premium at which supply and demand may raise the price, paying no regard whatever to the prospective chances of discoveries, or to the number and importance of points undeveloped. Then he is at the mercy of every rumour, or the machinations of interested dealers, and is as easily guided to sell that which was good to hold as he was led to purchase that of which he originally knew nothing, and of which he practically learnt nothing about whilst in his possession. He is as quick to condemn the share as worthless as he was to accept it at first as substantial and valuable.

Again, when anything is guaranteed, as, for instance, Peruvian, Turkish, Egyptian, and Italian bonds, the first enquiry should naturally be—What is the nature and value of the guarantee? And when a debenture is offered the buyer should ascertain what property is in existence upon which the proposed debenture was to be a mortgage. Both words imply assets, and are accepted by the simple-minded in that sense. Yet the guarantee may absolutely mean nothing, and the debenture may be a mortgage on the money for which it sells, and for nothing more; and, in conclusion, I may observe that the latter is the bait which the public has of late so greedily swallowed. In mines the future should constitute the criterion of value, and young progressive ones are those that will mostly repay the investor gains on his capital. I should not purchase a Van share at 700,000*l.* for the property, valuable as it is, when I could buy Trumpet Consols shares at 17*l.* each, nor should I buy East Pool shares (6400) at 18*l.* in preference to Herodsfoot (1024) at 35*l.*, nor should I select Treleigh Wood at 200,000*l.* against Emily Henrietta at 5000*l.*, Wheal Mount at 6000*l.*, or Wheal Lucy at 8000*l.*

Examples could be drawn to any extent, but let the above suffice to show the investor that he must not accept as good that which is most loudly advocated—market mines usually sell at double their intrinsic worth. East Caradon was foisted up to a fictitious price, 375,000*l.*; the value is now about 25,000*l.*, and the aggregate dividends amounted only to 91,333*l.* Again, West Chiverton shares (3000) sold at 80*l.* each; the price is now 12*l.*, and the gross dividends were only 50*l.* 7*s.* 6*d.*, and it is just a year since the last one was paid. There are numerous progressive mines that can be now purchased with advantage; the future is fraught with promise, pioner points are far advanced, costs of working light and practical, expensive machinery not required, whilst the prices of metals are good and advancing. To these and similar mines I shall in future direct the attention of investors, for from such spring the prizes that fascinate the capitalists, whilst they enrich and reward the hard working, persevering, and industrious miner, whose energy no obstacles can daunt, or strata resist his slow yet certain progress to success. A selected list of dividend and progressive mines forwarded upon application.

R. TREDINNICK,
Consulting Mining Engineer.

3, Crown-court, Threadneedle-street, London, July 22.

MINING—WORKING CAPITAL, AND PROFITS.

SIR,—The views on commercial affairs, and especially on matters in relation to Mining, enunciated in the *Mining Journal*, are usually so sound, that I was surprised to find in last week's Journal, in a Notice to a Correspondent, what I cannot but consider as a false principle for the estimation of mining profits. The exception I take is to the principle that profits can be generally estimated by taking so much per cent. on the *working capital* of the undertaking.

The position of the writer is that, whereas in ordinary business a 20 per cent. profit on *working capital* is a good result, in these new mining companies, with a *working capital* not above 10,000*l.*, a profit is promised of 100,000*l.*, or even 200,000*l.* per annum.

Now, in some branches of business most of the capital involved is working capital, and the profits may be estimated as you propose; but in manufacturing, and especially in mining concerns, the working capital cannot be considered without reference to the whole capital involved. But even if we consider the whole capital involved we cannot determine in any particular mining enterprise what will be the returns. For instance, I have a share in a copper mine which is returning 10,000*l.* profits. What does it matter how much or how little the mine originally cost? It would be equally fallacious to estimate the profits at so much per cent. on the *working capital*. A rise in the price of copper, or an increase in the richness or quality of the ore, may double the profits without affecting the whole capital originally sunk or the amount of the working capital for carrying on the concern. The value of a mine should be estimated by considering the probable amount of profits and the chances of their continuance. Great success is exceptional, and the chances of the future are in most cases very obscure, and, therefore, great caution is necessary in accepting the assurances of promoters of mining undertakings in distant countries promising large and continuous profits.

CAVEAT EMPTOR.

EMMA SILVER MINING COMPANY.

SIR,—Since writing to you last week in respect of this mine I have seen, by the *Sacramento Union* of June 22, that the Illinois Company have come into collision with the Emma Company, and asserted their right to possession of the geound in dispute in a decidedly demonstrative and not very unpopular manner. It is usual that a greeting of parties under such circumstances should be by an exchange of pistol salutes. The kind of friendship, by-the-bye, which might have been expected from the projection of the Illinois Company's tunnel in the Emma ground. If they did not intend to take advantage of any discoveries they might make by the operation it is difficult to conceive with what motives they could have been induced to make the outlay incident to such an experiment. It is not to be denied but that the Emma Company had reason to expect better things from the opposing party—as the *Union* states that the *principals* of the Illinois Company were the original vendors of the Emma Mine. This circumstance reminds me of one which once happened to myself. We had purchased—the company of which I was mining superintendent—some mines of a party here, who, with others, had made different *locations* on the same lodes, taking advantage of the natural undulations of the ground in which they were situate, called them by different names, as though they were distinct and independent lodes. They seem to have flattered themselves that by selling one set of those claims—those, for instance, made and dated subsequently to the others on the same lodes—they would be both selling and retaining legal possession of them at the same time. They evidently invested fiction with the attributes of fact, and esteemed it as of equal force in a legal contest. The basis upon which the fiction was sought to be poised was equally intangible with the fiction itself: it was this—the laws of the district, like those of all others with which I am acquainted, being that where two locations are made upon one lode, under the supposition that there were two at the time of making them, priority of location and title must always take precedence and settle the matter. The party in question seems to have confounded names with the things signified thereby, and to have regarded the former as of equal value and significance to the latter, both intrinsically and commercially. I remarked to him one day, when he rushed on to our works, having heard that some improvement had taken place in one of the lodes we had bought of him, and about which he appeared to manifest much anxiety and no little excitement, "Surely you would not wish to sell a mine to a party, and when it was developed rich by them, and at their expense, to get it back again for no other consideration than that you, through ignorance or design, made two locations on one and the same lode, calling them by different names, as though there were two lodes, but which were subsequently found to conflict." His earnest reply was accompanied by a significant shake of the head—"I don't know about that." Construing that reply as an affirmative answer to my question, I gave him credit, and still do, for coming as near to the truth on that occasion as he usually does in his business relations. I mention this merely to show your readers generally what they may expect when dealing with such men if reduced to anything like dependance on their moral considerations. I looked at my pseudo friend, and quietly informed him that, formidable as he appeared, we were not afraid of him, nor of anything he might be able to accomplish in the matter, but would like to purchase a few more such mines if he had them to dispose of, at similar prices, even though similarly conditioned.

It is scarcely necessary to say that the economy of the civilised world especially requires faith in man, but experience teaches us that that is a necessity which should be as little resorted to as possible. I rather like the maxim which enjoins to deal with all men in business relations as you would with those whose known proclivities and practices do not very strongly commend them to general esteem. All upright men in their dealings with others most cheerfully conform to this rule, and none but those I have ever met with, whose designs are sinister, betray a desire to evade it, or what is just as bad, evince a desire to confuse, by proposing to do ordinary business in an extraordinary way. A little more shrewdness in their business relations with their cousins on this side of the water, especially in mining, would not harm Englishmen I assure you.

I sincerely hope that these remarks may be received in a kindred spirit to that by which they are dictated, and their significance construed and appreciated conformably with the intention and purport of this communication.

ROBERT KNAPP.

Ellsworth, Nye County, Nevada, July 3.

THE EMMA MINING COMPANY.

SIR,—Either Mr. Hiram Johnson has forsaken all the leading daily papers, or (which is more likely) they have forsaken him. I do not even observe his name now figuring in the columns of the *Standard*, as it was wont to do. To this I attribute my being pestered again with his "unblushing circulars." The circular received this morning is directly at variance with all the "official statements" of the Emma Mining Company published during the past few days; and this person has the presumption and arrogance to set himself up as the Mentor of the Emma shareholders; and coolly insinuates that they should put no faith in their directors, but, on the contrary, place reliance only upon *his ipse dixit*.

I would not, Sir, waste ink upon the subject, but that I desire to warn my fellow-shareholders against being misled by such mischevious devices, and also to express my extreme surprise that the directors of the company should continue to suffer their "truthfulness and honesty" to be called in question by such a man with impunity. As the "circulars" are always addressed in a "female" handwriting, probably this pseudo-philanthropist thinks he has discovered a new and profitable "vein" for the employment of "female labour."

Whoever can suggest a method of putting a stop to the "sharp practice" of Mr. Hiram Johnson and his coadjutors will deserve to be styled a "public benefactor," and merit the gratitude not only of the Emma shareholders, but of every honest man.—*July 24.*

A FELLOW THAT HATH HAD LOSSES.

GREAT WESTERN SILVER MINING COMPANY.

SIR,—"M. S." (Salop) asks one or two pertinent questions in last week's Journal respecting the above mine. Everything from the formation of a company to its last stage ought to bear the test of the severest scrutiny, and a close examination into all the minutest details of this unfortunate company ought to be demanded by the shareholders. I was induced to take some shares before making proper enquiry, which I usually do, and ought to have done in this case, but when I wished to sell them through my own broker (a highly respectable city firm) I was informed that there were no buyers, and that some parties connected with the mine were not liked; this was an opinion which I did not like. Unless the officials are prepared to give satisfactory information as to their future intentions, I am willing to bear part of the expense, conjointly with others, in unearthing the mystery. Judging from the circulars sent to the shareholders, vacillation of purpose would seem to be the characteristic of our directors. However, if you will permit the matter to be ventilated in the Journal, I doubt not but some good will result.

A SHAREHOLDER.

NEW DOLCOATH MINE, AND ITS PROSPECTS.

The praises of the magnificent mine, called Dolcoath, are ever sung. It is, indeed, one of the finest mines in the world, its lasting powers being the marvel of the Camborne district. They call it "Glorious Old Dolcoath." The Cornish people extol its name, and boast its praise, and justly enough. It is divided into just 4300 shares, with (say) 11*l.* paid, and stands at 90*l.* Call the market value in a lump sum = 380,000*l.*, with a strong and rising market, what relation to New Dolcoath does it bear? It adjoins it, and drains it for 180 fms.—in other words, pays for the pumping of New Dolcoath. Now, the last-named mine is divided into 8000 shares (not twice the number of Dolcoath), and has a reserve of 2000 more, if ever needed, and a cash balance of 6000*l.* to open out the great lasting wealth known to be there in tin and copper. The price of the shares is 3*l.*, which gives 6000*l.* in reserve. Compare the capital of 8000 shares, now issued at 3*l.* per share (making 24,000*l.*) with Dolcoath and its 380,000*l.*, and let any mining expert point out the anomaly. Investors are rushing into new concerns which now flood the market, and believing that they best study their interests by placing their capital in some, at least, doubtful mines, or undeveloped adventures, no doubt rests in the minds of the holders of New Dolcoath but that their property will rival its far-famed neighbour. In other words, that their shares will stand at 48*l.*, if we compare the respective market values of the two valuable properties. The reports are very satisfactory, and copper ore is raised in good quantities. It may truly be said of New Dolcoath that there is no risk in the venture, it simply becomes a matter of labour to dig out the ore, without any risk of water coming into the mine (solely for the reason that it cannot remain in the mine, but must descend to its rich neighbour). New Dolcoath will be returning 12,000*l.* a-year profit in dividends shortly, it is fully expected. It is the exceptionally favourable mine of Camborne district, well managed, and one of the finest investments in the market, and now stands at ¼ prem. It may well be asked what are Dolcoath holders doing to miss this prize, with a shaft sunk 180 fms. in ground, and equal to their own property in minerals.

SENEX.

Truro, July 23.

[For remainder of Original Correspondence see to-day's Journal.]

COPPER ORES.

Sampled July 3, and sold at Swansea July 23.

Mines.	Tons.	Produce.	Price.
Cape Ore	47	34¼	£32 12 6
ditto	47	34½	32 10 6
ditto	47	34¼	33 0 0
ditto	47	34¼	32 15 0
ditto	54	27½	26 1 0
ditto	53	27½	26 2 0
ditto	53	27½	26 3 0
ditto	63	27¼	26 5 0
ditto	62	27¼	26 0 6
ditto	84	27½	26 10 0
ditto	76	27½	26 10 0
Regulus	10	53½	51 16 0
Berehaven	147	8¾	7 8 0
ditto	128	8½	7 12 0
ditto	97	7¾	7 0 0
ditto	73	8	7 6 0
ditto	82	7½	7 2 0
Sobral Ore	4	24¾	23 7 6
ditto	36	18½	17 7 0
ditto	44	13½	12 12 0
ditto	100	6¾	5 10 0
Paramatta	52	15½	£14 12 6
ditto	50	15½	14 11 6
ditto	50	15¾	14 12 6
Lisbon	33	23½	21 10 6
ditto	21	24½	22 10 6
ditto	1	26¼	23 8 6
ditto	7	26½	24 1 0
ditto	2	25¾	23 7 0
ditto	45	24	22 9 6
Fursdon	53	5½	5 12 6
ditto	34	3½	3 0 0
Bampfylde	27	18½	16 12 0
ditto	22	15½	13 12 6
ditto	10	4¾	3 7 6
Brass Ashes	83	3¼	2 0 0
Norway	79	7½	6 12 6
Telhadella	15	11¾	10 2 0
ditto	3	24½	22 0 0
ditto	17	11½	9 10 0
Cop. Refuse	142	5¾	3 19 0
Copper Ore	6	14½	13 0 0

TOTAL PRODUCE.

Cape Ore & Reg.	642	£18,353	11	0	Bampfylde	59	£781 14 0
Berehaven	527	3,854	14	0	Brass Ashes	83	166 0 0
Sobral Ore	184	1,822	10	0	Norway	79	523 7 6
Paramatta	152	2,220	10	0	Telhadella	35	379 0 0
Lisbon	109	2,433	4	0	Copper Refuse	142	660 18 0
Fursdon	87	400	2	0	Copper Ore	6	78 0 0

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Copper Miners' Company	218	£ 2,484 1 6
P. Grenfell and Sons	446	4,291 13 0
Sims, Willyams, and Co.	387	5,390 12 6
Vivian and Sons	449	7,948 11 0
Williams, Foster, and Co.	270	4,913 3 0
Mason and Elkington	94	3,062 1 0
Landore Copper Company	242	3,483 9 0
Total	2106	£31,573 11 0

NO SALE on Aug. 13.

TOTALS AND AVERAGES.

	21 cwts.	Produce.	Price.	Per unit.	Standard.
Whole sale	2106	16	£11 10 4	13s. 7d.	£115 15 6

LONDON GENERAL OMNIBUS COMPANY.—Traffic returns for the week ending July 21, 11,665*l.*, 5s. 6d.

GRYLLS'S ANNUAL MINING SHEET,

FROM JUNE 30, 1871, TO JUNE 30, 1872,

CONTAINING

The Quantity of Copper Ore sold from each Mine, British and Foreign—Average Price per 21 cwts., and the Amount of Money—The Average Standard, Produce, and Price for the Year, both in Cornwall and Wales—The Total Amount of Ore, Fine Copper, and Money—Each Company's Purchase—And the Particulars of Copper Ores sold at the Ticketings in Cornwall from June 30, 1853, to June 30, 1872:

CORNWALL.

Mine.	Tons ore.	Amount.	Price.
Basset, Wheal	526	£2,822 13 6	£5 7 6
Bedford United Mines	1,079	3,672 16 0	3 8 0
Belstone Mine	61	560 10 6	9 4 0
Brookwood	1,802	10,599 5 0	5 17 6
Buller, Wheal	75	867 2 6	11 11 0
Carn Brea Mines	987	5,105 9 0	5 3 6
Carn Camborne	218	941 13 6	4 6 6
Clifford	63	168 1 6	2 13 0
Craddock Moor	438	2,691 1 0	6 3 0
Crebor, Wheal	390	1,379 19 6	3 11 0
Crenver and Wheal Abraham	1,591	7,688 17 6	4 16 6
Devon Great Consols	16,329	66,034 5 6	3 8 6
Dolcoath	90	383 7 6	4 5 0
East Caradon	2,205	11,036 1 6	5 0 0
East Pool	2,497	9,270 18 6	3 14 6
East Seton	140	638 10 0	4 11 0
East Wheal Grenville	731	2,381 13 0	3 5 0
Florence and Tonkin	50	187 10 0	3 15 0
Friendship, Wheal	1,151	6,801 11 6	5 18 0
Gawton Copper Mine	1,758	6,781 7 0	3 17 0
Glasgow Caradon	1,757	10,657 13 0	6 1 6
Gonamena	357	1,393 3 0	3 18 0
Gunnislake (Clitters)	852	3,594 14 6	4 4 6
Hingston Down	1,628	9,277 12 6	5 14 0
Jewell, Wheal	240	932 2 6	3 17 6
Marke Valley	5,314	18,164 13 6	3 8 6
Mellanear	985	2,992 2 0	3 1 0
New Pembroke	253	1,894 18 0	7 10 0
North Downs	116	447 8 6	3 17 0
North Treskerby	602	2,829 14 6	4 14 0
North Wheal Crofty	297	1,776 17 6	5 19 6
Pennance Mine	60	523 6 6	8 14 6
Phœnix Mines	1,235	6,333 15 0	5 2 6
Poldice Mines	265	1,139 2 6	4 0 0
Prince of Wales	759	4,791 4 0	6 1 6
Prosper, Wheal	105	268 11 0	2 11 0
Russell, Wheal	1,073	3,959 13 0	3 14 0
Seton, Wheal	1,253	5,553 16 0	4 8 6
South Caradon	5,536	45,662 7 6	8 5 0
South Carn Brea	402	5,095 16 6	12 13 6
South Crofty	1,711	5,714 0 0	3 6 6
South Frances	319	1,993 15 6	6 5 0
Sundry small mines, &c.	755	4,205 11 6	5 11 6
Tincroft	122	473 2 6	3 17 6
Virtuous Lady	81	300 10 0	3 14 0
West Basset	792	3,481 13 0	4 8 0
West Caradon	878	3,604 1 6	4 2 0
West Damsel	212	800 9 0	3 15 6
West Maria and Portescue	1,319	4,733 2 6	3 12 0
West Seton	3,048	18,323 19 6	6 0 0
West Tolgus	2,819	15,187 8 0	5 8 0
White's Ore	167	95 3 0	0 11 6

WALES.

Australian	114	£1,674 10 6	£14 14 0
Berehaven	3,751	26,815 13 6	7 1 6
Brass Ashes	1,538	3,275 11 0	2 2 6
Burnt Ore	23	49 9 0	2 3 0
Cape Ore	3,364	88,843 7 0	29 2 6
Cape Regulus	778	31,963 12 6	41 2 0
Cappagh Ore	48	650 9 6	13 11 0
Concordia	8	177 2 0	22 3 0
Connorree Ore	306	662 8 0	2 4 0
Copper Ore	779	10,087 0 6	12 19 0
Copper Precipitate	47	1,392 19 6	29 13 0
Copper Refuse	249	902 8 6	3 12 6
Copper Regulus	304	4,130 12 6	13 12 0
Copper Slag	267	1,112 4 0	4 3 6
Copper Sludge	4	94 0 0	23 10 0
Del Soto	89	1,221 10 6	13 14 6
Dyliffe	67	254 12 0	3 16 0
Fursdon Ore	277	1,163 11 0	4 4 0
Knockmahon	3,563	24,811 19 0	6 19 6
Lisbon Ore	111	1,705 16 0	15 7 6
London Ore	24	211 4 0	8 16 0
Mill Refuse	23	163 6 0	7 2 0
Mixture	131	284 15 0	2 3 6
Moonta	964	11,952 15 0	12 8 0
Paramatta	949	12,646 15 0	13 3 6
Sobral Ore	282	2,230 1 6	7 18 0
Sundries	10	257 0 0	25 14 0
Sweepings	5	6 9 0	1 6 0
Telhadella	104	1,104 8 0	10 12 6
Tigrony	25	700 12 0	28 0 0
West Canada	819	11,150 17 0	13 12 0
Yelta	289	3,264 19 0	11 6 0

Copper Ores sold in Cornwall, from June 30, 1871, to June 30, 1872:

Copper ores	67,543 (21 cwts.)	Average produce	6½
Fine copper	4371 tons 13 cwts.	Average standard	£114 17 0
Amount of money	£ 316,213 1 6	Average price	4 13 6

Compared with the previous year,

Copper ores—decrease	6,824 (21 cwts.)	Fine copper—decrease	616 tons 4 cwts.
Amount of money—increase	£24,090 17s. 0d.		

Copper Ores sold in Wales, from June 30, 1871, to June 30, 1872:

Copper ores	19,343 (21 cwts.)	Average produce	15⅞
Fine copper	3074 tons 16 cwts.	Average standard	£ 96 19 0
Amount of money	£ 254,659 18 0	Average price	13 3 6

Compared with the previous year,

Copper ores—decrease	2,470 (21 cwts.)	Fine copper—decrease	660 tons 2 cwts.
Amount of money—increase	£14,175 18s. 6d.		

Totals in Cornwall and Wales.

Copper ores	86,886 (21 cwts.)	Fine copper	7436 tons 9 cwts.
Amount of money	£570,872 19s. 6d.		

Compared with the previous year,

Copper ores—decrease	9294 (21 cwts.)	Fine copper—decrease	1276 tons 6 cwts.
Amount of money—increase	£38,266 15s. 6d.		

Copper Ores purchased by the Copper Companies from June 30, 1871, to June 30, 1872:—

Purchasers.	Ore (21 cwts.)	Tons copper.	Amount.
Vivian and Sons	17,256	1196 15	£87,590 14 8
Pascoe Grenfell and Sons	8,703	859 19	65,780 10 2
Sims, Willyams, Nevill, and Co.	9,351	891 19	67,237 18 4
Willyams, Foster, and Co.	18,320	1921 19	153,020 12 4
Mason and Elkington	12,181	870 12	63,668 11 9
Copper Miners' Company	7,660	457 2	34,019 10 1
C. Lambert	3,959	346 14	28,492 13 10
Newton, Keates, and Co.	398	28 5	1,738 1 3
Sweetland, Tuttle, and Co.	6,309	617 0	46,967 14 3
Bede Metal Company	2,081	107 6	8,676 14 0
British and Foreign Copper Co.	133	96 0	3,135 10 6
Landore Copper Company	478	90 12	8,513 15 10
Ravenhead Copper Company	57	20 6	2,030 12 6

Copper Ores sold at the Ticketings in Cornwall, from June 30, 1853, to June 30, 1872:—

Date.	Ore (21 cwts.)	Money.	Produce.	Standard.
1853	180,095	£1,124,561 2 0	6¾	£106 12 0
1854	180,687	1,153,756 3 6	6½	126 16 0
1855	188,969	1,212,686 8 0	6½	140 2 0
1856	209,305	1,283,639 8 6	6¾	141 10 0
1857	198,697	1,276,844 12 0	6½	140 0 0
1858	183,290	1,083,728 18 6	6¾	139 6 0
1859	183,944	1,079,075 17 0	6¾	133 6 0
1860	180,448	1,079,403 4 6	6½	133 18 0
1861	176,097	1,013,400 5 6	6½	130 1 0
1862	186,662	977,017 2 6	6¾	127 13 0
1863	176,285	872,474 4 6	6¾	120 9 0
1864	166,707	858,586 1 0	6¾	124 17 0
1865	164,940	806,853 10 0	6¾	125 8 0
1866	148,777	678,641 3 0	6¾	113 7 0
1867	125,679	547,689 8 6	6¾	107 1 0
1868	121,815	554,029 19 0	6¾	110 15 0
1869	103,199	430,749 10 6	6¾	103 3 0
1870	90,227	374,612 0 6	7	98 12 0
1871	74,367	292,122 4 6	6¾	99 11 0
1872	67,543	316,213 1 9	6½	114 17 0

MINING GLOSSARY.—The third edition of the Glossary of Mining and Smelting Terms has now been printed, and contains carefully-compiled lists of the technical terms used in the mines of Cornwall, Derbyshire, South Staffordshire, Newcastle, and Spain; and of the smelting terms used in France and Germany. The book, which will be found extremely valuable to those interested in mines desiring thoroughly to comprehend the agents' reports, will be forwarded from the *Mining Journal* office, 26, Fleet-street, E.C., on receipt of 2*s.*, or may be obtained, by order, through any bookseller or newsagent.

ROCK-BORING BY MACHINERY—McKEAN'S DRILL.

FIG. 1.

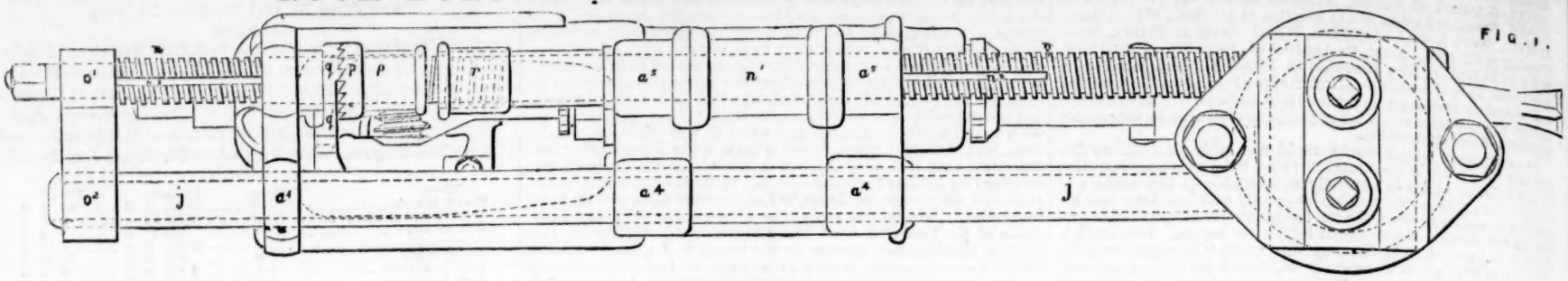


FIG. 4.

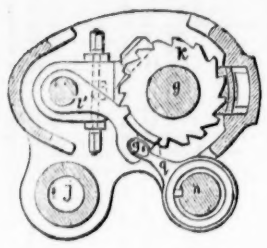


FIG. 3.

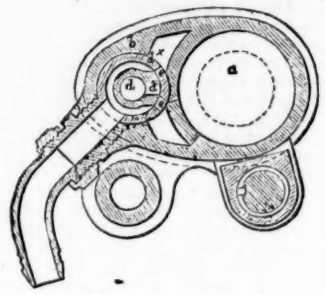


FIG. 5.

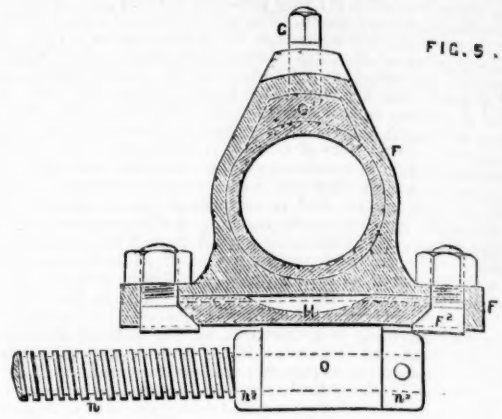


FIG. 2

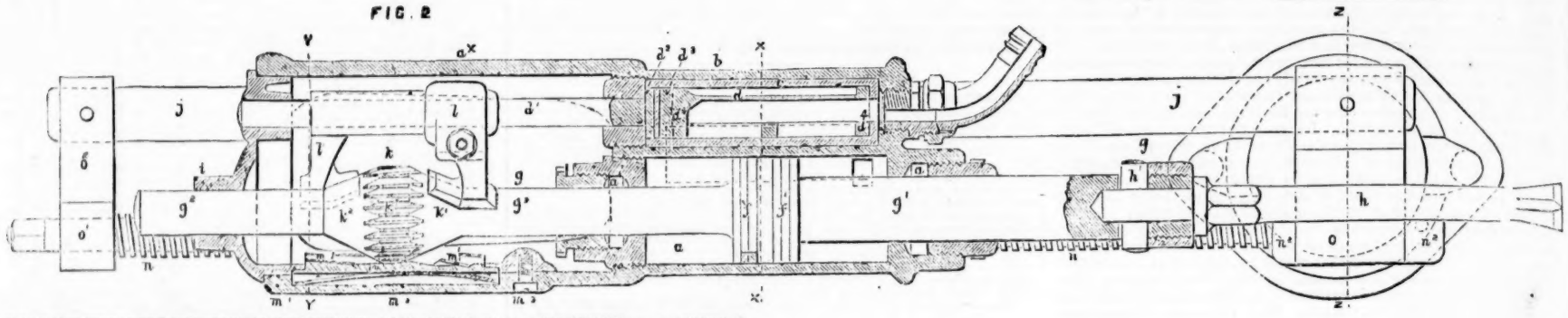


FIG 8

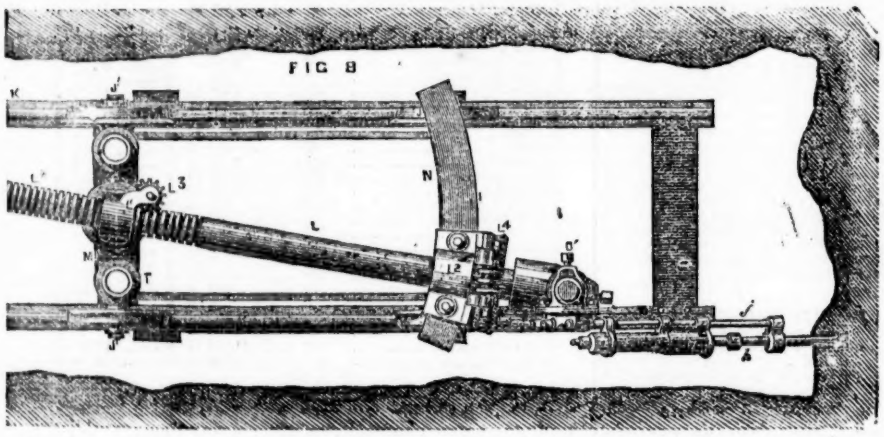


FIG 9

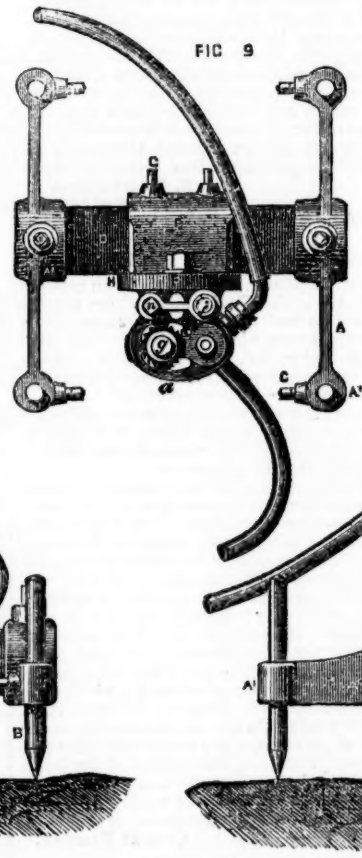


FIG 10

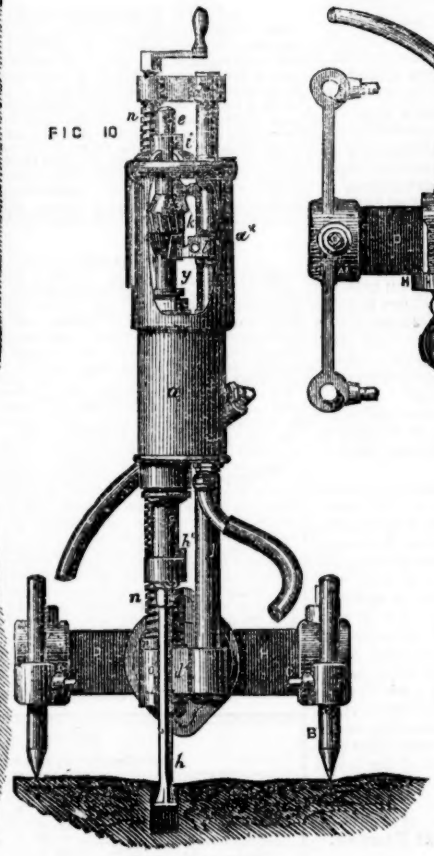


FIG 10

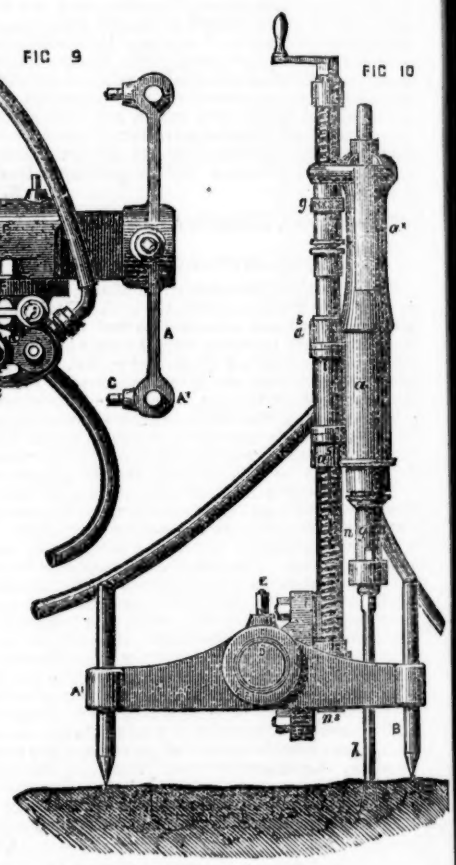


FIG 6

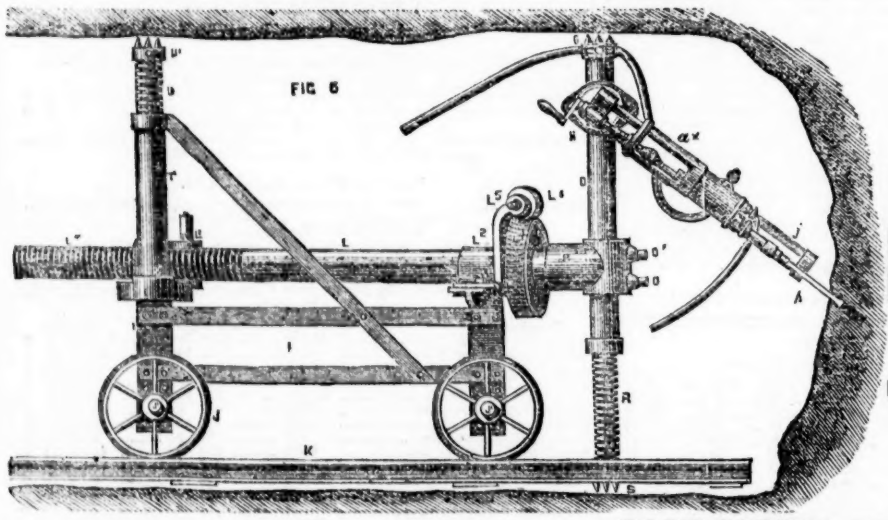
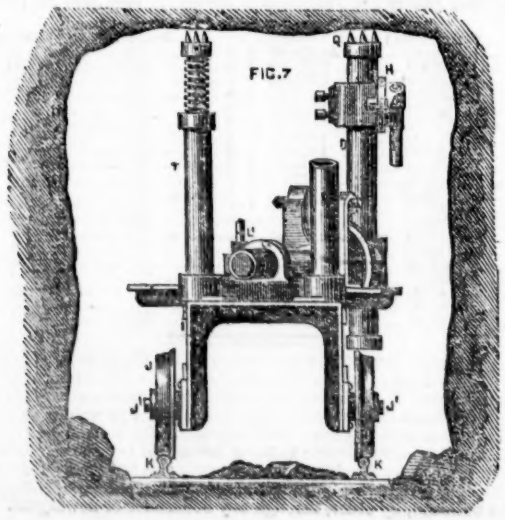


FIG.7



ROCK-BORING BY MACHINERY.

McKEAN'S DRILL.

Attention was directed some few years since to an improved rock-drill, invented by General Haupt, Professor of Mathematics and Civil Engineering in Pennsylvania College, and reports were published detailing the success of the experimental trials made with the machine in this country. Its construction, however, proved to be practically inadequate to the requirements of actual work, and Messrs. McKean and Co., of Paris, who had acquired the European patents, immediately set to work to produce a thoroughly practical machine. The persistency with which they have followed out their intention is shown by the fact that they have since constructed 22 distinct machines upon various plans of their own invention, with which they have made various and exhaustive experiments before bringing the matter again to the notice of the public. They found very great difficulties in arriving at a combination of mechanism that should produce the necessary movements of the boring tool without liability of some of the parts to breakage. Many ingenious devices were contrived, and some of their earlier machines have been in constant work for over two years with marked success, as we are informed, by Sir George Denys, in driving a mining tunnel through hard rock near Richmond, in Yorkshire.

Messrs. McKean and Co. now claim, as the final result, to have produced a machine that has no undue strain or work upon any of its actuating parts, giving it the quality to wear out rather than break down, and they are now prepared to submit it to the inspection and criticism of engineers, and all persons connected with mining and quarrying in this country. For the past fortnight one of their new machines has been in operation in London, and it certainly works as evenly and well as could be desired. The stone operated upon is a piece of very hard and close-grained Aberdeen granite, and the power of the machine is tested by drilling 2-in. holes through it in various directions from vertical to horizontal. As the thickness of the stone is but about 2 ft., the machine is placed at some disadvantage as compared with practical work in the heading of a mine, where its merits would be more apparent, as the difference of time required to prepare a face for a shot by the machine and by hand labour would be very striking. From carefully watching a series of experiments (the workman not being aware that the time was being taken), it appears that between the completion of one hole and the re-adjustment of the machine for putting in another in the same face, from 2½ to 3 minutes are occupied in shifting the frame and cylinder; the removal of a drill in order to replace it by another for continuing the hole to greater length (or, as would be necessary in case of the breakage of a drill point, a contingency which did not happen while we were present) occupies scarcely over ¾ minute, so that when the machine is once at the face the time during which it must be kept idle would be unimportant. The speed made in operating upon the stone mentioned was 15 in. in 2¼ minutes, or (say) 6⅔ in. per minute. Five holes were bored in succession with the same tool, aggregating 78 in., in 25 minutes, including, necessarily, four shiftings of the machine on the column, the average pressure of steam used being 75 lbs. on the square inch. The diameter of the hole was 2 in., and the drill point was the common flat-pointed mining-drill.

A great saving is claimed, and appears evident in the use of tools, on account of the precision of the stroke, and the regular and uniform rotations of the tool. Messrs. McKean and Co. state that they have recently bored holes from 9 to 10 feet deep in the hardest of

whinstone rock, using 12 tools to accomplish the same, whereas 97 new points were said to have been used in boring a similar hole by hand labour.

For mining work the drill is mounted on a vertical column, fixed rigidly by a telescopic and screw adjustment, in such a manner that the hole can be drilled quite as close and straight to the side as it could be by hand labour, and with equal facility is adjusted to bore for the top and bottom shots. The smallest size of machine will drill holes of any ordinarily required diameter for mining purposes, and any number of blows, up to one thousand per minute, may be given. The force of the blow can be made more or less at pleasure by the simple turning of a screw in connection with the valve gear. The whole force of the blow comes upon the solid piston carrying the boring tool, to which it is readily and firmly secured by a very simple and ingenious device. The steam or compressed air operates upon the piston in such manner as to keep it working in supension, the valve ports opening and closing in such a manner as to give the steam or compressed air its effective force, and a cushion at either end of the piston in its reciprocating movement. The tool is forced to rotate regularly in one direction, and the rotation is made to occur during the backward stroke of the piston.

For sinking shafts the machine is also mounted on a column placed crosswise in the shaft, and fixed rigidly by the telescopic and screw adjustment above mentioned, from which column any required direction may be readily given to the boring tool; or the drill may be mounted upon the adjustable stand or frame, as is designed for quarry and open work.

For driving tunnels where one or more machines may be worked against the face, the machines are mounted upon moveable and adjustable columns, supported upon a carriage moved upon rails.

For underground drivings a great advantage would seem to be secured by the use of compressed air in obtaining a constant and perfect ventilation, and the ready clearing away of the smoke after a blast, without the necessity of sinking shafts, as is ordinarily required.

For open work Messrs. McKean and Co. furnish a small portable boiler, mounted on two wheels, a convenient connection being made to the boring-machine by means of flexible hose inch tubing, expressly prepared for this use.

They have also a convenient and simple form of air compressor adapted for driving the machine in underground work.

That these machines are already well appreciated is shown in the fact that several orders are now in course of execution for this and other countries, the builders being Messrs. P. and W. MacLellan, of the Clutha Ironworks, Glasgow, and Messrs. Varrall, Elwell, and Middleton, of Paris.

For a full understanding of the mechanism reference will now be made to the accompanying drawings.

DESCRIPTION OF THE DRAWINGS.

Fig. 1 is a side elevation of my improved rock-drilling machine. Fig. 2 is a longitudinal vertical section of the same. Figs. 3, 4, and 5 are transverse sections on the lines, *x*, *x*, *y*, *y*, and *z*, *z*, of Fig. 2. Fig. 6 is a plan or top view shewing the said machine mounted upon a frame especially adapted for quarry work. Fig. 7 is a front elevation, and Fig. 8 a side elevation, of the same. Fig. 9 is a plan or top view of the carriage for supporting the machine in a tunnel, showing the said machine mounted thereon. Fig. 10 is a side elevation, and Fig. 11 a rear end and elevation of the same.

According to one part of these improvements, I construct the cylinder, *a*, the valve chest, *b*, and an extension, a^9, for supporting the guides and bearings for the piston and valve-rods, and for other parts of the mechanism, in one piece. I thereby diminish the number of parts, simplify the construction of the machine, and reduce the cost of its manufacture. The valve seating is a small cylinder, *c*, which is inserted into the valve-chest, or chamber, *b*, at the side of the main cylinder, *a*, as clearly shown in Fig. 2. The valve, *d*, is a hollow or tubular piece, with its axis arranged parallel to that of the cylinder, *a*, and it has a projecting curved face, d^*, on one side, extending from end to end thereof. This face forms the working part of the valve, and alternately covers and uncovers the admission ports, *e*, which extend endwise through the entire length of the valve cylinder, *c*. The centre of the valve forms the exhaust passage which communicates with a pipe at the end of the valve-chamber.

I obviate the necessity of a stuffing-box for the valve-spindle d^5 to pass through in the following manner:—The said valve-spindle has inside the cylinder *c* a collar or shoulder, d^6, which is faced and fitted steam and air tight against the end of the chamber through which the spindle d^5 passes. On the inner side of this collar is a projecting piece or tongue, d^7, which fits into a slot or groove in the end of the valve, so that any oscillating motion of the spindle d^5 will be communicated to the valve *d*; or the same result may be effected by making a projection on the valve, and a slot or groove in the collar of the spindle. Collars d^8 are also made at the ends of the valve, which form its bearings in the valve cylinder. These collars are well fitted to the said cylinder, to prevent the escape of the steam, and produce just sufficient friction to prevent any undue motion of the valve from the action of the tappets hereinafter described.

The piston, *f*, is formed solidly upon the piston-rod, *g*. The said rod is a solid bar of steel, with an enlargement to form the body of the piston, *f*, in which I turn grooves or channels to receive metallic packing rings, f^1. The end or portion, g^1, of this rod in front of the piston, and which extends through a suitable stuffing-box, a^1, is made, as shown, of larger diameter than the other portion of the said rod, to give it sufficient strength to receive and firmly hold the drill or cutting implement, *h*, which is secured directly in the end of the said rod by a cotter, h^1, or other suitable device. The rear end or portion, g^2, of the rod extends through a stuffing-box, a^2, and is also supported and guided in a bearing, *i*, carried on the extension, a^3, which, as before stated, is cast in one piece with the cylinder and valve casing. The said piston-rod, therefore, has three bearings, which give it great steadiness, and diminish the wearing action of the piston. On the small end, g^2, of the piston-rod, *g*, I make an enlargement, *k*, with two inclined faces, k^1, k^2, which forms cams for operating the oscillating distributing valve, *d*. The oscillating motion of this valve is imparted to it from these cam faces through the medium of tappets, *l*, *l'*, fixed on the valve spindle, d^5, with a capability of adjustment to allow the valve, *d*, to be properly set to effect the desired distribution of the steam or other fluid.

A portion of the periphery of this enlargement, *k*, between the two inclines, k^1, k^2, is made parallel or cylindrical. On this cylindrical portion I form ratchet teeth, k^3, which are cut spirally or obliquely across the peripheral surface. On one side of this ratchet, k^2, in a recess in the extension piece, a^3, is a bar, *m*, which has teeth, m^1, inclined to correspond with those of the ratchet, k^2, and of such a length that the said ratchet will keep in gear with the bar, *m*, throughout the movements of the piston rod, *g*. Within the recess at the back of the toothed bar, *m*, I place a spring or springs, m^2. At the forward stroke of the piston this bar is depressed in its recess as the ratchet, k^3, passes over it, but at the backward or return stroke of the piston the teeth of the bar, *m*, engaging with those of the rachet, k^3, produce a partial rotation of the piston rod, *g*, and drill, *h*. To keep the toothed bar, *m*, parallel with the rod, *g*, and to prevent its being pressed by the spring, m^2, too deeply in gear with the ratchet, I place stops, m^3, at the end of the recess. The feed or advance movement of the drill, *h*, is produced automatically by means of a feed screw, *n*, and nut, n^1, through the medium of peculiarly arranged mechanism which is actuated by one of the aforesaid tappets. The nut, n^1, is fitted immoveably between two brackets, a^4, cast on the cylinder, *a*. These brackets prevent any endwise movement of the nut, n^1, while its rotation is prevented by making one side flat and fitting it against a flat portion on the cylinder; or the said nut may be secured upon the cylinder by any other means which will hold it securely and immoveably thereon. The feed screw, *n*, which passes through this nut has one end supported in a socket, *o*, on the universal joint of the supporting stand or frame, as hereinafter more particularly described. This end of the screw, *n*, is formed with a collar or shoulder, n^2, on each side of the socket, *o*, to prevent its having any endwise motion. The said screw extends to the rear end of the machine, where it is supported in another bearing, o^1, formed in a cross bar, o^2, attached to the column, *j*. At the rear end of the cylinder the screw, *n*, passes through a sleeve, *p*, whereon is formed a flange, p^1, whose face has ratchet teeth. The sleeve, *p*, has no screw thread, and consequently the screw can more freely endwise through the same, but the said ratchet cannot turn without turning the screw by reason of a feather fixed in the sleeve and fitting into a groove, n^3, extending longitudinally along the screw. Against the ratchet face of this sleeve, *p*, there is another ratchet face, which is formed on another sleeve, *q*, that also surrounds the screw, *n*, but is free to turn around upon the same. The two ratchet faces are kept in gear by a spiral or other spring, *r*. On the loose sleeve, *q*, is formed an arm, q^1, which is actuated by one of the tappets of the valve spindle, as will be seen by referring to Fig. 4. By this means the loose sleeve, *q*, receives an oscillating motion, and imparts to the other ratchet, *p*, an intermittent rotating motion. This ratcher, *p*, being held by the aforesaid feather in the grove, n^3, of the screw, *n*, therefore causes the latter to turn, and as the nut, n^1, will not turn the screw, *n*, in its rotation causes the said nut to advance and carry with it the entire drilling or boring mechanism. I prefer that the tappet, l^1, which operates the arm, q^1, of the said ratchet should be formed with a notch to receive a tooth, q^2, on the end of the arm, q^1. I thus obviate the necessity of pins or other loose pieces for making the connection between the tappet and the arm.

For quarrying and other open work the supporting frame or stand of the drilling machine, as shown in Figs. 6, 7, and 8, is constructed with two side plates, A, of cast iron or other suitable metal, which have at each end a socket, A^1. These sockets are fitted with steel or iron bars, B, which are pointed at the bottom, and are held adjustably in the sockets, A^1, by pinching screws, C. At the centre of each of the two side plates, A, is a large socket, A^2, for the reception of a hollow or tubular shaft, D, which is also held by pinching screws, E, in the socket, A^2. This tubular shaft may be made of any desired length to adapt the machine to any circumstances—that is to say, for ordinary quarry work I should make the shaft, D, of such a length as would render the machine conveniently portable; but for cutting down and splitting beds of rock or stone wherein a number of holes in a line would have to be drilled, I use a shaft of sufficient length to extend across a number of these holes, and then the side frames are fixed and the machine is adjusted upon the said shaft between the said frames. Upon this shaft, D, is fitted a strong clamp, F, which is provided with pinching screws, G, and blocks, G^1 (see Fig. 5), or other suitable devices, whereby it can be securely held at any angular position upon the said shaft, but which will allow it to be turned, or moved, endwise thereon, to adjust it to any desired position.

This clamp has on one side a disc, F^1, in which is formed a shallow circular recess wherein is fitted a plate, H, which is held in the said recess by screws, F^2, with suitably shaped heads, as clearly shown in Fig. 5. This plate, H, has on its back the two sockets which receive the supporting column and screw of the drilling-machine, as hereinbefore described. This column and screw are placed parallel with each other, and the drilling-machine is mounted thereon by means of suitable brackets, a^1, at the two ends and central portion of the machine. The said screw and column are of such a length as to permit the required endwise feeding or advance movement of the said machine. The aforesaid circular plate, H, may be adjusted to any desired angular position, and may be firmly secured, when adjusted, by means of the screws, F^2. From the above description it will be seen that the support of the drilling machine allows of its easy and rapid adjustment in all directions.

In tunnelling and mining operations I modify the construction of a supporting frame, as shown in Figs. 9, 10, and 11. I use a carriage, I, with four wheels, J, formed to run on rails, K, and whose axles, J^1, are curved or arched, as shown in Fig. 11, so that the carriage will pass freely over the debris or any materials lying between the said rails. On these axles I mount a horizontal bar, L, (or two of such bars) which may be rotated or moved endwise upon the carriage, and may also be adjusted to any required angle horizontally upon the same. For this purpose the rear end of the bar is passed through a bearing, L^1, which is connected by a swivel joint to the cross-bar, M, while the forward end of the said bar is supported in a bearing, L^2, which is carried adjustably on the curved cross-bar, N; by moving this bearing on the curved bar the bar, L, is adapted to any desired angular position. On the horizontal bar, L, I form a circular rack, L^3, into which is geared the pinion, L^2; by turning this pinion the bar, L, is adjusted endwise in the bearing or socket, L^1. On the forward end of this bar, L, is mounted a hollow or tubular cross-bar, O, which is connected to the horizontal bar, L, by the socket, P, through which the said bar, O, is made to slide into any required position. The forward end of the bar L carries a worm wheel, L^4, and is connected therewith by a feather or key fitted in a long groove in the shaft which allows the said shaft to slide through the said wheel, but prevents its turning indepently of the same. On the bearing, L^2, is a bracket, L^5, wherein is carried a worm, L^6. The latter is geared in the worm wheel, L^4, and by turning the said worm the bar, L, is turned, and thereby the cross-bar, O, is adjusted to any desired vertical or angular position, so that it may be readily adapted to any inequalities of a tunnel. Pinching screws, O^1, or other devices, are provided to prevent the turning of the bar, O, in the socket. One end of the cross-bar, O, is closed and has a pointed shoe, Q, and at the other end is a screw, R, whose extremity is also provided with a pointed shoe, S. By turning the said screw these pointed shoes are forced into contact with the sides of the tunnel, and the machine is thereby held firmly in place. On the said cross bar, O, I place one or two of the drilling or perforating machines, which are supported upon the said cross-bar by means of the universal joint described in connection with the other modification of my supporting frame, shown in Figs. 6, 7, and 8, or by any other joint which will permit the required freedom of adjustment of the machines.

The carriage may also be provided with one or more tubes, T, provided with screws, U, projecting upward and at a right angle to the axis of the horizontal bar. These screws are provided with pointed shoes, U^1, and by turning the screws the shoes or points are pressed against the roof of the tunnel, the carriage being thereby held firmly between the rails and the tunnel roof.

METALLIFEROUS MINES REGULATION BILL.
MINES (COAL) REGULATION BILL.

In the House of Lords, on Tuesday evening, the Earl of MORLEY, in moving the second reading of these Bills, gave the following excellent epitome of their contents and object:—

My Lords, I feel I shall be consulting the convenience of your lordships if I make the two Bills which deal with the regulation of mines the subject of comment in one and the same speech, because the matters to be treated of in connection with both are almost identical. And, my lords, perhaps I may be permitted to express a hope that on this occasion I may be more successful than I have been in two or three recent instances in obtaining the co-operation of noble lords opposite. I need not dilate on the importance of these Bills. Manifestly they are of great importance if we have regard to the number of mines and the number of people employed in them. Not fewer than 500,000 persons engaged in mines will come under the operation of this Bill. At present there are 3142 mines under the regulation of the existing law, and in these 350,849 miners are employed. The number of new mines which will be included by the two Bills now before your lordships will be 1849, and the number of miners 92,565, so that there will be a total of 4991 mines and nearly half a million of miners under the operation of these Bills. My lords, the attention of Parliament was first called to the condition of persons employed in mines by the noble earl opposite (the Earl of Shaftesbury), who, assisted by others, succeeded in obtaining an Act of Parliament 30 years ago, which, supplemented as it has been since by several other Acts of a similar character, has wrought a great change in the moral and physical condition of the miners, and has thus shown that the noble earl and those who acted with him were amply justified in the course they took so long a time back. If your lordships turn to the report of the Commission, over which the noble earl presided, you will find that sometimes children of five years were employed underground; that at similar employment women occupied a position which was physically and morally degrading; and that the moral darkness of the miners, men, women, and children, rivalled the physical darkness of the regions in which they worked. The Mines Act at present in force is one passed in 1860 by Sir G. Lewis, but since the passing of that Act there has been a large increase in the number of metalliferous mines and coal mines. In 1864 a Royal Commission was issued for enquiring into metalliferous mines. That Commission was presided over by Lord Kinnaird. The Commissioners drew up a very careful report, on which was based the Metalliferous Mines Bill, on which one of the Bills now before your lordships is founded. In 1867 a petition was presented to the House of Commons by the coal miners of the country; that petition was referred to a Select Committee, and on examination of the statements of the petitioners it was found that they drew attention to a vast number of points in the present state of the law which, it must be admitted, were well worthy the consideration of Parliament. The petitioners suggested certain alterations in the law, some of which were accepted and some of which were rejected by the Select Committee. Your lordships will find that many of the improvements recommended at that time are embodied in the Bills now before the House. I shall say one word as to the history of the Bills which have been introduced since the Act of 1860. The noble lord to whom I have already alluded (Lord Kinnaird) introduced his metalliferous Bill two years ago, but withdrew it on the understanding that it should be amalgamated with a Bill extending to coal mines. It was, however, found subsequently that the two classes of mines were so different that the regulations applicable to the one would be totally inapplicable to the other; and consequently the Government have this year endeavoured to deal with the subject in two distinct Bills. At the same time I think the noble lord (Lord Kinnaird) will recognise features of his own child in the Metalliferous Mines Bill, though I hope it will be found we have improved on the noble lord's effort. The subject of mines we divide into three great divisions. First we deal with the employment of women and children; secondly, with the question of inspection; and, thirdly, with the question of safety. I propose, with your lordships' leave, to describe in each case what is the present state of the law, and what is the amendment we propose.

In the first place as to *Women and Children*, your lordships are aware that no woman is now allowed to work underground. As to children, no child of less than ten years of age is allowed to work underground, and children between 10 and 12 are not allowed to go underground unless on a certificate that they can read and write, or unless on the condition that they are to attend school for six hours each week during their employment in the mine. After the age of 12 there is no restriction whatever, in the case of children who work above ground. Now, this is felt by the miners, and I think it will be felt by your lordships, to be utterly inadequate, though in cases like this it is hopeless to lay down any iron rule. The present system as regards children is inadequate, because, in the first place, there was no security that the certificate came from a competent person. The examination of a child might be the merest farce. Then, in case the boy cannot read and write, attendance at school twice a week for three hours each time is not sufficient to enable him to obtain any usual amount of education. Now, this Bill proposes to amend the law in this manner. It proposes that no child under the age of twelve should be employed in a mine. The Select Committee on Metalliferous Mines thought that was the earliest age at which children should be allowed down in mines. There will be only one exception, and this will be it the case of thin seam mines, but not as a rule even in these. The exception is made in consequence of a petition, signed by thousands of miners, which states that if the rule were enforced in the case of thin seam mines the working of many of them must be retarded, and there are reports of Inspectors that working in these mines does not injure the health of children. By permission of the Secretary of State children will be permitted to work in thin seam mines, even if only between the ages of 10 and 12, but the half-time system and educational conditions, similar to those imposed by the Workshops Act, will apply to the case of such children. They may work six hours for six days a week, or ten hours for three days, and their attendance for education must be at least 20 hours per fortnight. The regulation for boys above the age of 12 and under 16—the age at which they are commonly called young persons—will be that they shall not work beyond ten hours a day or 54 hours a week, and the hours are to be counted from the time of leaving to the time of returning to the bank. Those are the main changes as regards employment, and they are mainly three—1. The limit of age for mining underground is raised from 10 to 12 years.—2. New regulations are laid down for boys between 12 and 16 years; and thirdly, the provisions of the Workshops and Factories Acts are extended to miners working above ground.

The second division of the subject is *Inspection*. In this no material change is contemplated by the bill now before your lordships. At present the number of Inspectors is twelve; ten years ago it was only six; and 30 years ago, when the noble earl opposite (the Earl of Shaftesbury) moved in the matter, it was only one. No doubt it will be necessary, in consequence of the additional number of mines and miners which will come under the operation of the law, to increase the number of Inspectors, though I cannot at present state to what extent. It has been pressed on the Home Secretary that it would be desirable to have a more extended system of inspection. The present duties of an Inspector are to have a general knowledge of the mines, to give warning to the owner if he knows of danger, to make enquiry into accidents, to attend accidents, and to make an annual report as to the state of the mines in his district. Well, it was proposed by mine owners themselves, and by many other persons, that this inspection should be very much increased. The arguments against this proposition are that it would be inexpedient to relieve owners of their responsibility, that quarterly inspections of mines would be impossible without, at least, 200 Inspectors, and that even with such an inspecting staff the reports would be fallacious. In some cases mines are 80 or 90 miles in extent, and a certificate of safety given by a Government Inspector must be fallacious in such cases. Therefore, my lords, the Bill proposes no change in the general system of inspection, but under Clause 62 miners may appoint two of themselves to inspect the mines at least once a month. This system is pursued in Lord Vane's mine; it is one of mutual confidence, and it has been found to answer better than any Government inspection.

Next, under this Bill *Certificated Managers* will be appointed in coal mines. This question has been discussed at considerable length in the other House. Accidents often occur from the ignorance of viewers, and the experience of Belgium and other countries proves that improved education of the miners and those over them would cure many dangers. The proposal to give certificates to managers has been objected to on the ground that it would take away the responsibility of the owners; but it will be remembered that the choice of the manager will still be with the owner. The only difference will be that he will choose a person who has received a certificate. Your lordships know that at present masters of ships must obtain a certificate before they are allowed to go to sea in charge of a vessel; and though I do not say the cases are quite analogous, there is sufficient analogy between them to make the argument drawn from the certificated masters of ships a sound one in the case before your lordships, because it would seem only natural that managers of mines, who have the lives of so vast a number of persons in their care, should have certificates of some kind. It has also been urged as an objection that experience is more valuable than science in the case of the management of a mine. Now, I do not wish to undervalue experience, or what is called "the rule of thumb," but I do not see why experience and science should not go together in this affair of the management of mines. It is an acknowledged fact that many of the accidents which now occur are due to the ignorance of managers of mines. My lords, various proposals have been made as to the mode of examination. There have been schemes for the nomination of examiners by the Secretary of State, and schemes for the election of examiners by different classes of persons. These plans have been much discussed, and as a result a mixed plan has been adopted in the Bill. This plan is that the Home Secretary should nominate three owners, three miners, and three engineers, who will form a board of nine, and this board, in conjunction with the inspector of the district, will choose the examiners. The general rule in future will be that all managers must obtain a certificate by examination; but if such a system were carried into operation at once one of its effects will be to throw out of employment a number of valuable men, who, though unable to pass an examination, are perfectly competent for their posts by reason of long practical experience. The way in which this difficulty is met is by a certificate granted for service of 12 months as managers of a mine at some time within the last five years. My lords, I venture to think this system will increase the securities for safety without unduly diminishing the responsibilities which ought always to rest with the owners and occupiers of mines.

My Lords, I now come to the third division of the subject. It is the most important one, because it has to do directly with the *Safety of the Miners*. The first part of this branch of the Bill is a re-enactment of the measure passed in consequence of the Hartley Colliery accident. The effect of past legislation has been to cause a decrease in the number of accidents, though, unfortunately, the number is still large. From 1850 to 1800 one life was lost to every 67,000 tons of coal raised; from 1864 to 1868 the loss was one life to every 98,000 tons; in 1870 the loss was one life to 113,000. The deaths in 1870 were 991, whereas if the proportion of one life to 67,000 tons of coal had been maintained the deaths in 1870 would have been nearly 1685. The number of persons employed per life lost in that year was 356. The number of accidents not fatal are not recorded, but your lordships can well understand that those accidents represent a vast amount of suffering and distress. Now, while on this point, I think it is important we should enquire into the causes of accidents, because there is an erroneous impression that by far the larger number are caused by fire-damp, though this is not the case. In 1870, the causes of fatal accidents in coal mines were by fire-damp 185, or one-fifth of the whole; by the falls of roof or coal 411, or two-fifths; by shaft accidents and miscellaneous, above and below, 410, or two-fifths. This proportion, my lords, is exactly confirmed by the summary for the ten years from 1856 to 1866, and it shows that out of the lives lost by accidents in coal mines only 20 per cent. are by fire-damp, while 40 per cent. are by falls of roof or coal. Proper ventilation in mines is, of course, a matter of the very greatest importance. The gas becomes dangerous when mixed with four times as much atmospheric air, and it ceases to be dangerous when it mixes with 14 times as much atmospheric air. Now, my lords, in the existing law the words under "ordinary circumstances" occur in relation to the regulations for ventilation. We omit them in this Bill because they were almost valueless. How can the prosecutor prove that the circumstances were ordinary? The owner is considered *primâ facie* liable. An accident occurs which proves that the ventilation was indifferent, and the owner may exonerate himself by proving that he took reasonable precaution. But, my lords, accidents do not occur in ordinary circumstances; they occur in extraordinary circumstances, though in many cases these may be foreseen to some extent, and any well-conducted system of ventilation should be intended to serve its purposes under extraordinary circumstances. Mr. Brough, one of the Inspectors, mentions the case of a blower of gas, which gave off 130,000 cubic feet of gas in ten minutes. When he first came to the pit only 12,000 cubic of air per minute passed through the pit. He caused this to be increased to 80,000 cubic feet per minute. An accident occurred which, under the conditions in which the Inspector found the mine when he first visited it, would have caused the death of 500 men and 70 horses, but no life was lost. Every well-conducted mine has a great deal more ventilation than is necessary in ordinary circumstances, the object is to guard against bad management. I now come to the provisions for preventing accidents caused by the falling of roof or coal. I have shown that this is the most frequent cause of death. The men are careless, and in their anxiety to make the largest wages they are careless in the matter of propping. In Durham and Northumberland there is a rule in force under which the miners are not allowed to prop their own work. The propping is done by different men from the miner, under the superintendence of the managers. What has been the result? In Durham the deaths from falls are 1·95 per million of tons of coal raised; in Northumberland the number is 2·75. In North and East Lancashire it is 4·70, in West Lancashire 5·81, and in South Wales 6·57 per million of tons. In the last three places the propping is done by the men who work out the coal. Of course, my lords, when

looking at these figures, we must remember that there are other causes to be taken into consideration—such as the hardness or softness of the strata, &c.; but at the same time the figures are so striking that they are well worthy of our attention. This part of the Bill proceeds on the rule which has worked so well in Durham and Northumberland, but in does not go so far. It does not prevent the miners from propping for themselves, but it provides that this work must be under the superintendence of an overseer.

My lords, as the law stands coals can be weighed, measured, or gauged. The Bill before your lordships provides that *Coal shall be weighed* only, and by standard measure. It is objected that the provision is an interference with contract. I admit that, but the interference is not further than is necessary. Various weights are at present customary, and the uncertainty of the capacity of the measures is a constant source of dispute. We think, therefore, that the provision has such advantages that it ought to form a portion of the Bill. As coals are sold by weight there would not seem to be any good reason why they should not be raised by weight, and it would be pushing the doctrines of political economy too far to reject the clause on the ground of its interference with contract. In order to meet an objection raised on the ground of the expense of providing weighing machines, the Secretary of State is to have the power of exempting particular mines from the operation of this clause.

The last question with which I have to deal with is the *Liability of Owners*. Our object in this Bill is to throw the responsibility on the owner if he cannot prove due diligence. Under the Factory Acts of 1844 the occupier is *primâ facie* liable, but can exonerate himself if he can prove due diligence, and can point out the culpable person. We do not propose in the Bill to enact this condition. The owner will, however, be *primâ facie* liable, but all that will be necessary for him to prove is that he had used all due diligence—that he had taken all reasonable means by publication and enforcement of rules to prevent contravention, or non-compliance with them. As to the institution of prosecution, it is provided by the Bill that the Inspector only can prosecute an owner or agent, unless with the consent of the Secretary of State. This latter provision is intended to meet cases in which the Home Secretary does not think the prosecution ought to be undertaken on behalf of the Government. Some apprehension has been expressed as to the provision for penalties, but I think your lordships will find that the penalties are rendered more fair and just towards the employers and the employed. For a breach of the law owners will be liable to a penalty of 20*l.*, and 1*l.* a-day during the continuance of the offence. The miners for a breach of the law will be liable to a penalty of 2*l.* This is the same as at present, but the Bill gives an alternative of three months' imprisonment. Either an owner or miner may be imprisoned, but this would be only for a personal act—for personal default or negligence by which the safety of persons' lives was endangered. Considering that hundreds of lives may be lost by one of these accidents, I do not think Parliament will be acting too stringently in giving the tribunal before which an offender is brought the alternative of imprisonment in such cases as I have stated. There will be a power of appeal, and there is none under the existing law.

There are many other matters of detail, but I think I have touched on the principal provisions of the Bill. It has been carefully drawn and carefully sifted in another place. Many of its provisions are the result of mutual concessions between the various parties concerned; but, as a whole, the Bill follows the legislation of the last 30 years, and I ask your lordships to read it a second time, in the hope that it will even more than the other Mining Bills which have preceded it succeed in diminishing the risks to which workpeople engaged in mining operations are, by the nature of their calling, so much exposed.—The noble earl concluded by moving the second reading of the Metalliferous Mines Bill.

Lord DE ROS said that the rule with respect to propping now existing in Northumberland and Durham had been attended with the best effects, and he recommended the Government to make the clause relating to that subject more stringent by inserting in it a prohibition against miners propping their own work.

The Earl of SHAFTESBURY said that when in 1842 he moved his Bill in the House of Commons, Parliament and the country were not ripe for the legislation that was required on this subject. Consequently, he had been obliged to confine himself to less than ought to have been done. What he and those acting with him at the time did accomplish was a prohibition against the employment of women underground, and one against the employment in that way of any child under 10. The Bill now before their lordships did not go as far as he could wish, but he thanked the Government for it. What had already been done in the way of legislation had effected a considerable improvement in the moral and physical condition of the miners. He was not prepared to move any amendment, because he knew that, in those matters, Parliament must proceed tentatively; but he thought that all the educational benefits of the Factory Act should be extended to mining children up to the age of 13. In 1844 it was found that the engines for hauling things up and down the mouths of pits were in charge of boys of 10 or 12. As a matter of course many accidents were the result. He succeeded in limiting the employment to persons not under 15. This Bill brought the limit up to 18. He was glad of this, and should be glad to see the limit still higher, for young lads had not the sense of responsibility which persons ought to possess before they were employed at such a post. He was happy to observe that something was done in the Bill for the women employed on the banks of the mine. Some of these poor women were very degraded, and their appearance as seen in photographs, showed it. There was great room for improvement in their moral condition. He was much against the employment of young boys in mines. In some countries—Prussia, for instance—no youth under 16 was allowed to be employed down a mine. One must consider what it was for a boy of 10 or 12 years of age to be for a number of hours beneath the earth in darkness. It must produce a serious effect on his mind, and the mental depression to which it necessarily gave rise must prevent the child from having much inclination for education. He could produce statistics to show how difficult it was to get such boys to go to an evening school, whatever the inducements held out to them. He again expressed his obligation to the Government for what the Bill would do for an industrious, homely, and simple-minded people. (Hear.)

The Bills were then read a second time.

TREASURE HILL MINES—SOUTH AURORA.—The Diamond Drill in the Satterthwaite tunnel is doing good work. Thirty feet have been made in the two drifts since the drill was placed in position. The progress has been so rapid that the pipe on hand will be used up before the arrival of a new supply, which will be landed on the ground as soon as possible. We reproduce the following description of the Diamond Drill, published in our issue of the 26th:—"One of these drills has been placed in the Satterthwaite tunnel, or lower level of the South Aurora Mine, under the direction of Dr. Goodfellow, and commenced boring on Monday. He proposes to prospect this mine downward and at various inclinations eastward, to distances varying from 500 to 1000 feet. The drill is a diamond-cutter, as its name indicates. The diamonds are rough, dull-appearing stones, about half an inch in the longest diameter, and firmly set in the bottom of a hollow iron mandrel. There are four of these stones, two of which project slightly beyond the outer circumference, and two inward toward the centre of the mandrel. The motion of the drill is rotary, and as the diamonds cut downward a cylinder or core of rock is left in the mandrel or boring bar. This is broken off at convenient distances, and brought to the surface for inspection. The hole cut in the rock is 3 in. in diameter, and the core inside the drill is 1 in. The sand produced by the cutting diamonds is washed to the surface by a stream of water that is constantly descending through the hollow boring rods, and ascending outside of these rods from the bottom to the surface. An upright tubular boiler, with an oscillating cylinder engine of about 5-horse, furnishes the power. To this is attached a pump, and a screw so arranged as to govern the pressure on the cutting bar. Through the limestone of this country, and at moderate depths, 30 ft. per day is a low estimate. It is the opinion of geologists and engineers who are well acquainted with this locality that Dr. Goodfellow, reaching out in this way, must certainly disclose the mineral wealth of Treasure Hill that lies far down, and of which we have been working only the froth and foam of the heavier treasure that lies below. In his explorations this community is much interested, and in his success we anticipate a future of industrious prosperity."—*White Pine Daily News*, June 29.

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Meetings of Mining Companies.

YUDANAMUTANA COPPER MINING COMPANY OF SOUTH AUSTRALIA.

The annual general meeting of shareholders was held at the Terminus Hotel, Cannon-street, on Monday,

Mr. HENRY HILLS in the chair.

Mr. S. R. PATTISON, F.G.S. (solicitor to the company), read the notice convening the meeting.

The CHAIRMAN presumed they would take the report as read, and would, therefore, in as few words as possible say what had taken place since the last meeting. They would recollect that at the time of the last meeting the directors were engaged in raising fresh capital on debenture bonds. In this respect the majority of the shareholders did very little to help them out of the difficulty, and ultimately himself and Mr. Martin had to take a very large proportion. However, the whole amount was raised. Then with regard to the position of matters at the mines, the directors felt somewhat dissatisfied with the time occupied in sinking the shaft, erecting machinery, and, in fact, with the progress generally in the colony, and therefore requested Mr. Martin to go to the mines, and make such changes as in the interests of the company he might deem necessary. Mr. Martin, consequently, went over to the colony, and upon visiting the mine found that affairs were not satisfactory. There was no distinct charge of malversation or dishonesty to be brought against any individual officer, but the amount of progress had not been made that should have been made, and altogether there had been a want of forethought in connection with the management of the mines which characterised the management of many colonial proceedings. Whilst Mr. Martin was considering what would be the best course to adopt, there was another difficulty presented itself in the sudden death of their manager, Mr. Fiveash. Mr. Martin, therefore, had to look around for someone to replace him, and after using every effort to find the best possible man selected Mr. F. J. Botting. Both Mr. Martin and the directors hoped and believed this would be a good appointment, and to give an idea of the energy and vigour with which it was intended to carry on operations for the future, great changes had already been made at the mines. Since Mr. Martin's return the directors had been carefully considering the advisability of finding some thoroughly competent man in this country, and sending him over to take the entire management and superintendence of the mining and smelting operations. From the quantity of copper that had already been obtained there was no doubt of the value of the property; they had a good mine, and all they had to do was to have it properly managed, and to get the copper out of it. He concluded by formally moving the adoption of the report and accounts.

Mr. MARTIN had much pleasure in seconding the motion, and in doing so would endeavour to explain what he had done in connection with his visit to the colony. Upon his arrival in the colony he found things very different from what he considered they should have been, and he at once set to work to put matters right. He did not believe there had been any case of dishonesty, but there had certainly been a very general want of energy and proper ability. A more honest man than their late manager he did not believe they could find, and he was sure that whatever mistakes he had committed had been pure errors of judgment. He would first refer to the Blinman. At the mines he must say that he found things much worse than he anticipated. Work was going on, but without the slightest energy; they seemed going on as a matter of course, and because they must go on, and that was all. He succeeded in bringing matters to a better state, and in completing the rather unpleasant and difficult task of reducing expenditure. After doing all he could at surface, he went underground to look at Hill's lode, of which they had heard so much, but he did not see it. They might think it strange that he never saw that lode until he explained how it was. When they struck Hill's lode they also struck a large quantity of water, which rendered it necessary to sink a new shaft in order to drain the lode. The new shaft was sunk to cut Hill's lode, and they had been very successful in accomplishing this. During the time he was there there was never less than 2 ft. of water on the lode, sometimes 3 ft., but he obtained some knowledge of the lode. He went as far as the water would allow him, and then requested Capt. Terrell to go on and break down pieces from the lode at places which he (Mr. Martin) indicated. In this way he obtained samples from six different places in the lode, and found that in all these places the ore was of the same kind. The portion of the lode which he thus examined was from 16 to 18 feet long and 14 feet wide, and in every instance he obtained a rich sulphuret of copper, with 30 per cent. of metal. They must understand, however, that commercially nothing had been done on Hill's lode up to the time of his leaving the colony. He subsequently went down the mine with Mr. Botting to examine the general workings, and could conscientiously say that he had never before seen more ore standing in the mine. From 13 tons per month when he went over, they had got to return 40 tons in one month, 30 tons in another, and so on, and had he been able to stop six months he believed he would have been able to pay off all the debenture bonds. He knew no reason why those now in charge of the mines should not show equally good results. The mineral resources of the district north of Port Augusta had been ascertained and reported upon, on behalf of the South Australian Government, by Mr. George Ulrich, of the Geological Survey of Victoria, and his report, which was essentially a government report, fully confirmed all that had been stated as to the value of the mine. It confirmed Phillips's report, and confirmed every favourable report they had had; there was no doubt that in the Blinman they had a brilliant future. With a good resident superintendent—a really good man—at the mine, he believed they would have little to desire; they required a sort of superintending purser, as he believed he would be called in Cornwall. He had no doubt that Mr. Botting would do the duty he had undertaken, but they wanted someone as well to reside on the mine. He would observe that if such a mine as Moonta, which was only a few hours from Adelaide, required such a managing superintendent, surely it must be still more necessary for the Blinman, which was 3½ or 4 days journey. He was sure the result would be improved twentyfold; they wanted simply a man of ability and judgment, and one who would pay his whole attention to the mine. There was no want of ore, no want of wood, nor of water, but they wanted a man to see that they were properly utilised. There was plenty of stuff on surface of 6 or 7 per cent., and this could readily be dressed up to a higher produce, as they had now, as he had said, plenty of water. He might congratulate them that their liabilities were very small in the colony. The whole of the pitwork was now down, and all was paid for, and he was not aware of any one single person having any claim upon the company except the bondholders and the bank, in respect of the Port Augusta mortgage effected two years ago and for current accounts. Thus far he had spoken of the Blinman only. As to the Yudanamutana he was confident that in it they had a very valuable property lying idle, the necessary consequence being that the Blinman had had to bear all the expenses of the whole establishment. He believed, however, that the Blinman was the better of the two, and this was also the opinion of Ulrich, Phillips, and others who had seen the mines better. It was a great pity, seeing the present high price of copper—21s. 6d. per unit—that the Yudanamutana was not at work. What they wanted was to build three or four furnaces, and smelt the ore now at surface. They had plenty of wood and two or three piles of ore, perhaps 100 or 200 tons of 20 or 25 per cent. ore. It might be asked—if the company do not work the Yudanamutana why not sell it? Upon this shareholders were very sensitive. If they worked the Yudanamutana they would be enabled to save exactly what the Patent Copper Company were now gaining as profit from the company. The Patent Copper Company were getting, and very properly so, a profit upon treating the company's ore. The fact was they had not sufficient copper at the Blinman to keep a refinery going, but the Yudanamutana ore could easily be run down to 90 per cent., and then taken down to the Blinman and treated with the produce of that mine. This would give them 6, 10, or 12 per cent. (he was inclined to think the latter was nearest), or whatever profit the Patent Copper Company made. He did not know that he had anything more to tell them; but he would be happy to answer any question they might put to him. He was very sanguine about the property, and only regretted that he could not stay another six months in the colony, in order to see everything in full work.

A SHAREHOLDER enquired whether the company had not been left terribly bare of wood?—Mr. MARTIN said a mistake had been made in letting the drays go away.

Mr. TENDRON understood Mr. Martin to say that the company was in a better position when he left the colony than when he arrived by nearly 4000*l.*—[Mr. MARTIN: By nearer 7000*l.*]—So much the more satisfactory, and he believed that if they only worked the old portions of the property, leaving Hill's lode out of consideration, they could get enough profit to pay off the bonds and pay dividends, so that all they got from the new shaft ought to be in excess. He would like to know how many men they could set to work on the lode. Could they raise 200 tons or 300 or 600 tons per month?—[Mr. MARTIN: Yes, if the ore be there.]—That he admitted was a necessary condition, and assuming it to be 30 per cent. ore, what would it be worth per ton, and what would it cost per ton to raise?

Mr. MARTIN said that the costs were about 1600*l.* per month, so that if they raised 300 tons per month it would give, roughly, a little more than 5*l.* per ton as the cost of raising. They might roughly estimate the value of 30 per cent. ore at 30*l.* per ton, at present prices.

The CHAIRMAN remarked that a shareholder had said that the position of the company was much better than appeared from the report. That was the fact. The date to which the report extended was November only, and although, as Mr. Martin left the colony at the beginning of April, later information might have been given, the directors thought it preferable that Mr. Martin should make his statement verbally, especially as he had expressed his willingness to do so, and to submit to any cross-examination upon it which the shareholders might desire. The value of such cross-examination they would all recognise.

Mr. MARTIN said that, with regard to the changes which had taken place in the price of copper he would like to state that the highest price which copper realised whilst he was in the colony was 14s. 6 5 16ths per unit. It was now 21s. per unit, but the rise took place subsequently. He mentioned this that they might not run away with the idea that the improved results shown whilst he was in the colony arose from any improved value of copper.

Major-General HIGBY considered it could be more satisfactory evidence of the value of the mines when the company earned sufficient profits to pay dividends. They had been told that they had a rich mine, and he remembered that it was said two years ago that the only reason that they had no dividend was that the price of copper was so low. They had been going on for ten years without making profits, and he would like to know whether they were to do so indefinitely? He never understood that they were 20,000*l.* in debt, yet it appeared that until the debentures were issued they could not get out of their difficulties.

The CHAIRMAN said that the only question was whether they could get out 40 tons fine per month. If they could do that they would make profits; but as long as they kept on with 16 tons, 20 tons, 22 tons, &c., fine they would continue to make loss. It had, they believed for want of foresight and energy, occurred that 40 tons per month had not been raised before; and if the new manager could not get out 40 tons fine per month they would be very much disappointed.

Mr. GARNE considered the shareholders were much indebted to Mr. Martin for having gone out to the colony, but he thought that if Mr. Hills, their chairman, had been a man of business he would have found a good superintendent long ago. He then referred to several items in the accounts, and asked the meaning of the item for legal expenses.

Mr. PATTISON said, the item legal expenses were the expenses connected with the issue of the debentures.

Mr. HALL explained that the other items referred to were all included in the colonial accounts, and were all properly vouched for.

A SHAREHOLDER suggested the directors should forward copies of advices received from the mines to every shareholder. He was himself a considerable distance from London, and felt that he was entitled to the same information as London shareholders could obtain by calling at the office.

The CHAIRMAN said that abstracts of the reports were always sent to the *Mining Journal*, and inserted without charge. If any shareholder called at the company's office, he, or any of his colleagues, would be happy to give them every information, but he considered it would be most detrimental to their interests to publish all the information that was obtainable by shareholders at the office.

Mr. SALMON explained that they got three reports each month from the colony—one from the mining captain, one from the manager, and one from the accountant. In these there were frequently matters of a purely business nature which it would be very unadvisable to give to the public, but if they wished to have the same abstract sent to every shareholder as was sent to the newspapers there could be no possible objection.

Mr. PATTISON said that the important points of all reports relating to the mines were sent to and published in the *Mining Journal*, and it had now been arranged that the parts of the Government reports which most affected them should be published through the same channel.

A SHAREHOLDER enquired whether due care was taken to ascertain that there was no unnecessary loss in the extraction of the copper. There was, he believed, no similar company in the world which does not take care to know how much ore went into the furnace, and how much copper came out; yet, he had looked at the Yudanamutana accounts and could not ascertain that fact.

The CHAIRMAN said that every heap was tested before smelting, and that every particular which the shareholder required was obtainable from the accounts received at the London office. If he would favour them with a call he would show them how the details were very readily arrived at.

Mr. F. W. FREESE could, as one of their auditors, congratulate them upon the position of the undertaking. The copper realised last year but 13s. 6d. per unit, while this year it was realising 21s. 6d. The difference which this would make in the position of their accounts was that they would show a profit of 3000*l.* instead of a loss of 3000*l.* With regard to the debenture capital he would remark that, from his investigation of the accounts, he observed that when it came to putting their hands into their pockets shareholders who were loud at the meeting did not come forward at all; and but for the large proportion of the 20,000*l.* worth of bonds taken by Mr. Hills and Mr. Martin, they would not then have been discussing the affairs of the company at that meeting, as they would have been long since in liquidation. He thought that all of them should remember that. He did not think one-sixth part of the shareholders took a single debenture. With regard to dealing with the debenture bonds, he would suggest that, after making provision for the necessary reserve in the colony, any money at the disposal of the company should be applied partly to the payment of dividends on the shares, and the remainder to the redemption of the debentures. From what had been stated he thought that two or three extra furnaces should be erected, for if they got five or six furnaces at work he thought all ought to go on well.

Mr. SALMON did not object to the redemption of the debentures, but thought it as well to recollect the injunction of a lady, whose name he had forgotton, but who was an authority on cooking, as to the necessity of catching a hare before cooking it.—The CHAIRMAN explained that as they intended to ship all rich ore above 25 per cent. the five furnaces they now have was ample for every purpose. Of these five furnaces four ought to be constantly in working order; and as the ore they were hoping to get from the new lode would not require smelting at all, it would be useless now to erect more furnaces. The more extended development of their property must be left until they got profits from Blinman, and could pay some dividends. The directors were now seeking to find a man to take the entire superintendence and management at the mine, and one that would not become demoralised by living at the mine.

A SHAREHOLDER suggested than in future meetings should be held half-yearly.

Mr. PATTISON said that they had been in the habit of holding half-yearly meetings, and the sole reason that none was held last half-year was that there was really nothing to communicate. The Chairman undertook that in future the meetings should be held regularly half-yearly.

Mr. ATRELL complained generally of the management of the company, and of a sum being charged for Mr. Martin's travelling expenses.

Mr. SALMON remarked that the mine would have collapsed long ago had it not been for Mr. Martin, and it had more than once happened that Mr. Martin had given his own personal guarantee, without asking any security whatever from the company, in order to enable the company to get over a difficulty with regard to finance. He would ask whether there was a gentleman and man of business in the room, except perhaps the shareholder who had made the objection, who would visit the colony at the request of the directors, and pay all his expenses out of his own pocket; not even taking into consideration that the result of Mr. Martin's kindness had been that he had met with an accident whilst in the service of the company. As to the redemption of the debentures he thought it would be very unwise to fetter the directors in the matter. They had first to get the profits, and then the shareholders might condemn them if they used them improperly.

The report and accounts were then unanimously adopted. Messrs. Henry Martin and W. Salmon were re-elected directors, and Messrs. Freese and Goodson were re-elected auditors.

Mr. TENDRON, as one of the trustees for the debenture holders, would never forget the handsome manner in which both Mr. Martin and their Chairman had behaved in connection with the taking of the bonds when others refused to come forward in the matter. They were also deeply indebted to Mr. Martin for having consented to go over to the mines.

Mr. TENDRON so fully concurred with the views just expressed that he thought it would be unjust if they separated without recording their thanks to Mr. Martin in a formal manner.

Mr. GARNE had great pleasure in seconding the motion.

It was then put to the meeting and unanimously resolved that the best thanks of the meeting be given to Mr. Martin for his very valuable services on behalf of the company. The proceedings terminated with the usual vote of thanks the the Chairman and directors.

THE MINERAL RESOURCES OF SOUTH AUSTRALIA NORTH OF PORT AUGUSTA.

An elaborate report has just been prepared for the South Australian Government, by Mr. GEORGE H. F. ULRICH, F.G.S., of the Geological Survey of Victoria, and printed by order of the House of Assembly. The information given will prove of considerable value to all connected with mining in the colony, and as the interest in certain of the mines is principally held in this country the details he supplies with reference to those mines will be fully given.

At the BLINMAN MINE the ore deposit appears to be one of the vertical stocks or massive mineral segregations that traverse the strike of the country, and show a nearly vertical dip. It forms at the surface (on top of a hill about 90 ft. above a creek adjoining close eastward) a massive lenticular outcrop (*Moco*, boil), nearly 100 ft. in thickness at one point, of dense ferruginous calcareous sandstone at both walls, which towards the centre gradually changes into a dense brown siliceous limestone—strike nearly due north and south: length of main mass about 350 ft., but traceable on the surface, both north and south, for about 100 ft. further. Throughout the mass, but less distinctly in the limestone, a sort of lamination or bedding is observable, at an angle of dip eastward, varying between 70° and 80°. The outer sandstoney portions seem poor in ore, but the central limestone portion (now nearly worked out) was found richly impregnated with specks and small patches of malachite and cupriferous gossan, and also traversed by larger and smaller veins of these ores. The deposit, as a whole, is bounded on the east by bluish and mottled shaly slates, with a very steep eastward dip, which changes, however, at a short distance further east (opposite slope of valley) to about 30°. The rock on the west side is not well exposed at the surface, but apparently consists of a calcareous, ferruginous, partly brecciated sandstone, striking north 25° east, and dipping westerly at an angle of about 60°. At a short distance north, and close east of main-stock mass, a great irregularity is apparent in the outcrops of the beds of the country (alternating calcareous shales and sandstones) as indicated on Mr. Cooper's plan. Considering this feature in connection with the dips of the rocks on either side of the stock-mass, it seems not improbable that the latter represents an irregular lode—the local expansion of an original fissure—close to or in the line of an anticlinal axis of the strata, the disturbances observable in which are, perhaps, in some measure connected with its formation. In my opinion, the deposit has every chance of permanency in depth.

The exploration of the mine has formerly been conducted in rather an irregular manner, owing to the practice of following only the richer veins, or working the larger pockets of ore—the former leading frequently to the latter. Immense cavities, connected by narrow passes, have thus been formed, which are mostly quite open and unsupported, as the veinstone, on account of being both hard and tough, does not require any timbering. This is a very favourable feature, for, although the mineral mass is expensive to work in consequence of its closeness, still the saving on account of timber far outweighs this disadvantage, because suitable props and cap-pieces for such cavities could not, perhaps, be obtained within a radius of 50 miles from the mine. The walls of the open workings are quite irregular, and consist of similar mineral as that removed—the true hanging and foot walls of the deposit having not as yet been explored by cross-cuts at any point, though this would be a most advisable proceeding. At several places fine veins and small patches of ore are still visible in the walls, and I believe there is every probability of payable ore existing both east and west of the open workings.* The larger veins of ore traverse the stock-mass at oblique, some at nearly right, angles, but innumerable smaller veins run intermediate or join the larger ones from all sides, whilst the stone between is more or less strongly impregnated with ore besides. At 40 fms. in depth sulphide ore, copper pyrites, makes its first appearance, and increases in quantity down to the water-level, at 50 fms., where, in the bottom of a large pit, close south of engine-shaft, a fine vein of rather friable but nearly pure copper pyrites was struck, that runs nearly east and west, and is from 1 to 3 ft. in thickness. In this portion of the mine the deposit, opened for 15 ft. to 20 ft. in width, looks undoubtedly richer in ore than nearer the surface, the impregnation and veins of copper pyrites through the matrix—which latter is here white, rather more silicious in character, and generally softer than higher up—reaching, perhaps, 20 to 25 per cent. Below the 30 fathom level the deposit has not as yet been wrought northward of the engine-shaft, though, judging from the exposed face down the latter, the indications are by no means unpromising in that direction.

Besides the minerals already mentioned, the following ones occur in the deposit—Azurite (blue carbonate of copper), rarely in small specks near the surface; reddish and black cupriferous brown iron ore, in veins and patches; a black and muddy sulphide, coating copper pyrites; very little iron pyrites, in small cubical crystals; galena, in small specks; heavy spar (sulphate of baryta), of a rich yellowish brown colour, in nests and irregular veins, often finely crystallised in dense cavities; white calcite, in thin veins and nests, often though rather imperfectly crystallised; aragonite, in fine druses of acicular crystals; quartz, in thin seams

* Mr. Martin, one of the directors of the company, informed me that since my inspection of the mine a cross-cut was opened westward at the water level near the engine-shaft, and struck at a few feet in a fine vein of copper pyrites.

and small patches. On the slope of the hill, in close proximity to the deposit, the rocks enclose also small nests of micaceous iron ore. The influx of water in the engine-shaft is already very strong, and will, no doubt, increase considerably in depth. This, in connexion with the elevated position of the mine, will prove very advantageous for the working of the crushing and ore-dressing machinery shortly to be erected, and for which there is already ample scope in the large heaps of refuse piled up at the surface, and that contains apparently from 3 to 7 per cent. of ore. As regards the crushing-mill, care should be taken not to crush finer than to the size of the impregnated ore specks. For ore dressing a series of classifiers in connection with the new kind of self-acting jiggers for the coarse stuff, and self-acting rotating tables or side-throw percussion tables for the sluices, would, in my opinion, be the most preferable. As far as hand separation (by boys) is practicable, it ought, however, under all circumstances be resorted to—experience in European mines having clearly proved it to be more advantageous than machine dressing.

ORATUNGA.—This mine lies on the southern slope of a low range, about 12 miles north-west of the Blinman; it has a pipe vein 12 or 14 ft. wide, and 6 to 8 ft. thick. The ore consists at the outcrop of an ochreous gossan, full of small patches, irregular veins, and fine druses of acicular crystals of malachite, associated occasionally with similar druses of aragonite. The stoppage of the mine was, it is said, caused by the deposit being faulted in depth by a slide. Mr. Ulrich could not examine the fault for water, but considers that if the faulted portion were recovered again it would not be profitable to work for any length of time, except its dimensions, at present very small, did considerably augment in depth.

NUCCALEENA.—It is eight miles north-west of Oratunga, close east of Blackfellow's Creek. The open workings indicate that the ore deposit is a true lode, which in a flat curve, having a mean strike of W. 20° N., crosses the steep slope of a pretty high hill, and traverses the beds of the country, the strike of which is S. 45° W., with a north-easterly dip at an angle of about 33°. The lode consists of ochreous gossan, enclosing massive patches and druses of atacamite, generally associated with some malachite and chrysocolla, patches of tile ore, less abundantly small veins and patches of cuprite, and more rarely still specks of native copper. Mammillary brown iron ore and calcite appear frequently in irregular cavities. From his inspection Mr. Ulrich is of opinion that the mine has been given up rather too hastily, and deserves another trial in depth.

WARRIOOTA.—This is 1¼ mile west of the point where the track to Stilling Rock Mine crosses the Warrioota Creek. There is a lode 1 to 2 ft. wide, striking E. 15° N., with well-defined hanging-wall, but rather irregular footwall. With regard to the future prospects of the mine, he says should working ever be resumed they do not appear very favourable, judging by the rather poor kind of ore last raised and left on the ground; however, rich sulphides may, perhaps, exist in depth. There are some good-looking quartz reefs in the locality which might be tested for gold.

SLIDING ROCK.—This mine is about 40 miles north of Blinman, and is in full operation—Capt. Vivian agent, and Mr. Hemming underground foreman. The ore at present produced there is the richest Mr. Ulrich saw during his trip. At surface it was chiefly not very rich carbonates, but the ore changes in depth to an association of red oxide of copper, native copper, green and some blue carbonate in a soft, clayey, partly ferruginous matrix, which is interspersed with larger and smaller fragments of rock from the hanging-wall. Taking the richness and abundance of ore and favourable features of the mine into consideration, it ought, by proper working and management, to prove a very profitable enterprise.

NEW COPPER ORE DISCOVERY.—This discovery is about two miles S. 30° W. from Constitution Hill. There are also copper ore indications about one and a-half mile west of Constitution Hill.

MOUNT ROSE.—This mine is about two miles north of Mount Rose, at the foot of a high spur close west of Mount Rose Creek. The copper occurs in pipe-veins running close together. On account of the nature of the ore, and the relation of the veins to the country, Mr. Ulrich thinks there is a good chance of the latter continuing in depth.

YUDANAMUTANA.—The district in which these mines are situated *viz.*, amongst the northern spurs of the Yudanamutana range—is both physically and geologically the most interesting I have visited on my northern trip, and presents abundant indications of mineral deposits outside those already opened; in fact, it has not only the aspect of, but possesses also, certain geological characteristics generally found in a rich mineral country. Its features are along the southern part—though on a small scale—wildly Alpine in character, presenting bare, brown-looking precipitous mountains and broken spurs, studded with fanciful cliffs and peaks, divided by narrow rifts and gorges, whilst, in picturesque contrast, lower gently sloping hills and less broken ranges, covered with a coarse vegetation, succeed towards the north. As regards the geological interest attaching to the district, and which embraces the conditions by analogy favourable for mineral riches, it lies in the presence of an intrusive rock—a peculiar kind of greenstone—with metamorphic concomitants of great variety in texture and mineral character.

The chief and most developed ore deposit, which, according to report, was first discovered in the district, crosses a lowish hill, rising within the angle of confluence of the Yudanamutana Creek, and one of its main tributaries. It is a so-called "contact lode," as it runs within the line of boundary of the just-mentioned intrusive rock on the east and the accompanying metamorphic schists on the west, lying in places between the two, or traversing sometimes the one, sometimes the other kind of rock in its course. Its mean strike is N. 10° W., and its dip eastward at 70° to 80°, whilst the metamorphic rocks adjoining strike N. 40° to 45° W., and dip south-easterly at 60 to 70°. Judging from the workings, the lode seems to have varied from 2 ft. to about 15 ft. in thickness, and has, from top of hill southward, been traced for close upon 20 chains in length. At the farthest point of the line south a vertical shaft has been sunk about 50 ft. deep, from which the ore produced (a heap lying outside) is very poor, consisting of brown jaspery quartz, full of veins and patches of micaceous iron and ochrey brown iron ore, with merely scattered green copper stains and coatings in hollows and joints. About nine chains northward from this shaft, across a broad talus flat, with surface untouched, lies a fine roomy whim-shaft, sunk beneath the water level. A lot of ore left near, and evidently raised from it, shows for the greater part a kind of breccia, composed of brown, jaspery-looking, ferruginous limestone, brown iron ore, and chrysocolla, associated with malachite and occasionally azurite. The remainder consists of dense chalcedonic quartz, full of interlacing veins and patches with radiated structure of malachite and large pieces of micaceous iron ore, coated with crystallised malachite in hollows. Of sulphide ore no traces were observable. The metamorphic slate rock of the spoil heap is full of green stains, and shows occasionally thin mammillary bluish-green coatings of chrysocolla. From this whim-shaft to the base of the hill (2½ chains), and about one chain up the latter, the lode has been bodily taken out for some depth, its thickness having apparently ranged from 2 to 6 ft. in places. Besides fine pieces of malachite and chrysocolla, there lie some smaller ones of reddish grey oxide near these workings, which would indicate that the ore from this portion of the lode was of very good quality. The walls of the excavation are thickly coated with green copper stains, and consisting as they do of alternating beds of micaceous, hornblendic, and thickly-bedded flinty slates, afford clear evidence that the lode crosses the strike of the country. From the end of the open workings, for about three chains up-hill to the mouth of a tunnel, the lode seems to be pinched at the surface, as the latter is quite untouched and no outcrop visible. The tunnel driven in the strike of the lode passes through alternating beds of micaceous, hornblendic, and chloritic schists, which show veins of greenstone ramifying from the mass of this rock, close east adjoining, and are thickly impregnated with scales, and traversed by thin veins of micaceous iron ore, whilst here and there joints and cracks are thinly coated with chrysocolla and malachite. Pretty-looking fragments of the slate, covered with small nobs and thicker mammillary crusts of these minerals, are abundant in the spoil heap. Some ore lying near, and apparently got out of this tunnel, consists of brown and micaceous iron ore, full of coatings and small patches of malachite and azurite, and showing scattered specks of grey oxide of copper.* About one chain eastward from the tunnel mouth a trench has been opened on a parallel lode, which is composed of micaceous iron ore and quartz, and traverses the massive greenstone rock. There are abundant green stains and coatings, but no solid copper ore observable in the quartz and iron ore exposed. The tunnel communicates with an open excavation, nearly on top of the hill, about one chain in length and half a chain in width, from which, no doubt (judging from the small waste heap and specimens scattered about the surface near it), a large quantity of rich ore (silicate, carbonates, and oxides of copper) was obtained. The western wall of the large pit consists of metamorphic slates, striking north-west, and dipping south-west at 65°; the eastern one of massive greenstone, showing here and there small protruding bosses of a syenitic character. The lode shows in the northern face of the pit, but is thin and apparently very poor, and continues so on the surface, which is untouched for about one chain further northward. Here commence open workings, which have a steep easterly underlay, are 3 to 4 ft. wide, and extend for two chains in the strike of the lode, passing almost wholly through greenstone rock; a tunnel, also driven through this rock, from the head of a small gully close east, communicates with them near their northern point of termination. The quality of the ore obtained was, according to specimens scattered about, similar to that of the large excavations previously noticed.

The workings on the line of the lode terminate with two shafts, sunk a few feet apart, at a short distance north of the end of the open workings, and it seems, from the absence of ore in the stuff thrown out, that the lode is either pinched or runs out at that point. Should the former be the case, a "new make" would further north be cut off, or faulted by a strong reef of dense fine granular quartzite, thickly impregnated with small crystals, and grains of magnetite and micaceous iron ore, which runs nearly east and west across the hill. About half a chain east of the southern end of the last open workings, there is a small excavation in greenstone, exposing veins of micaceous iron, with patches and coatings of malachite, and at a distance of half a chain west of that point a trench, some 30 ft. long, has been opened on a small lode, running parallel to main lode, partly through slate, partly through greenstone, from which, according to specimens left on grass, an earthy kind of the same copper ore seems to have been obtained.

From the scattered positions and size of the workings and nature of the ore along the line of the main lode, as just described, it must be concluded that, as far at least as its surface portion is concerned, the latter is not uniformly well developed throughout, but consists of a series of bunches of larger and smaller size, and probably also of variable richness. On account of the whim-shaft being full of water, and the absence of all conveniences for descending the other workings, I was not able to ascertain the nature of the lode in depth, and can, therefore, not offer an opinion as to its future prospects, but so much I may venture to say that although its character as a "contact lode" renders it on the one hand subject to irregularities in thickness, strike, and dip, it is, on the other hand, favourable for its permanence in depth, as experienced in lodes of the same kind in other mining countries, and as long as the lode continues there is, of course, chance for ore. According to Capt. Terrell, a fine vein of rich green ore (probably chrysocolla and malachite) exists in the bottom of the whim-shaft, and similar payable ore was also left in the deepest parts of the hill workings, intended to be opened up from the latter. As this ore will no doubt change in depth to sulphide, the large quantity of micaceous iron at present accompanying it would certainly cause some trouble in dressing. Capt. Terrell observed, however, that this undesirable associate decreases gradually in depth.

The stoppage of the mine, and the abandonment to gradual destruction of valuable property, in offices, stores, miners' houses, mining tackle, &c., was caused by the fearful drought several years ago. The Yudanamutana Mining Company intend, however, as Mr. Martin, one of the directors, informed me, to start work again shortly, not only in this but also in several smaller mines, next to be noticed, which belong to the company. The principal one of these—the so-called Wheal Gleeson—lies about 25 chains north-east of mine offices, beyond a range bounding the Yudanamutana creek on the north, the workings extending from a small flat up the northern slope of the above range. In the flat there are three shafts—one, a fine whim-shaft—sunk pretty close together on a lode which strikes somewhat irregularly in the mean north and south, and dips steeply eastward, judging by a trench of several chains in length opened on it, and according to which it makes a strong bend westward. It is apparently only from 1 to 3 ft. in thickness, and consists near the surface of rubbly slate, mullock full of veins, and irregular masses of brown and micaceous iron ore, enclosing seams, solid patches, and coatings of earthy malachite. In depth, this rather poor ore, according to Capt. Terrell, gave way to rich black oxide of copper, of which a lot sold in the English market realised a very high price. At a distance of 2½ chains eastward from this lode runs a smaller lode parallel to it, which, as exposed in a trench running up the slope of the hill, is apparently similar in mineral character, though poorer in ore. A tunnel, about two chains in length, has been driven from near foot of range to open this lode in depth, but result apparently unsatisfactory. Between the two parallel lodes on slope of the hill runs a cross lode at a strike of N. 22° E., and dipping steeply towards W. 25° S., which has been prospected by a shallow shaft, round which lies gossan ore similar in quality to the surface ore of the lode first noticed. A fourth small lode, lying about 3½ chains east of this latter, and running parallel to it, has been opened by a short tunnel at some height up the range. It is composed of bluish white slaty mullock, showing scattered thin seams, small patches, and stains of malachite. The rather poor quality of the ore, the smallness and general character of the three lodes last noticed, do certainly not warrant expensive operations on them. However, if, as intended, work is recommenced on the first lode, which shows good ore in depth, it would, no doubt, be highly advisable to prospect them in depth by driving from the whim-shaft—a not very expensive undertaking, considering the short distances at which the lodes lie apart. As regards the country which the lodes traverse, it consists of alternating, thick bedded, micaceous, satiny, and flinty-looking slates, which show copper stains near the lodes, and strike N. 40° W., with apparently a south-westerly dip at 50° to 60°. The northern slope of the range, facing the workings, is studded with nobs, and traversed by reefs of a fine granular blueish or yellowish white quartz, much resembling quartzite, which is thickly traversed by thin veins of white, coarsely crystalline quartz, and encloses scattered scales and small patches of micaceous iron ore, more rarely, also, small crystals and grains of iron pyrites.

About half a mile, in the direction E. 20° S. from mine offices, several shafts have been sunk close together on a low rise, on what, from its small extent, appears to be a pipe vein of copper ore 3 to 4 ft. thick, and dipping apparently steeply northward, judging by the underlie of the principal shaft. Some ore left near the latter consists of green carbonate, with specks of grey oxide of copper, associated with much micaceous iron and dense brown hematite. Ore of far better quality was, however, according to Capt. Terrell, left in the bottom of the deepest shaft, when working had to be given up on account of too much trouble and expense, caused by combating a heavy drift sand issuing from a fissure struck during sinking. The country around these workings consists of alternating talcose and micaceous schists.

Another deposit of copper ore lies about 50 chains east from offices, running from a gully up to the top of a low hill, and having near the gully reefs of dense grey quartz on both sides, whilst on the top of the hill there is only one such reef on the eastern side. It consists of greyish white, thick-bedded, earthy slate, which is densely traversed by white argillaceous veins, and encloses patches and small concretionary masses of earthy malachite, associated occasionally with azurite, whilst the rock itself, though showing no sign on the outside, is, on being broken, found strongly impregnated and minutely veined with the former mineral. This deposit —apparently a layer-like impregnation—has only been prospected by two shallow pits—one at the foot, the other on the top of the hill; but it deserves a more extensive trial.

Of other notable mining features in the neighbourhood of the main lode the following may be mentioned:—At a distance of about 27 chains south-east from mine offices, on top of a hill, crops a fine lode of dense red hematite, in places 6 to 8 feet thick, which traverses greenstone rock at a strike of E. 20° N. This lode is plainly traceable for four to five chains in length, and close northward of the point where it runs into the next gully towards the east there is a small excavation, exposing rubbly, hornblendic slate, stained with and enclosing small patches of green and blue carbonate of copper.

About three chains south from the hematite lode appears a craggy outcrop, above 30 ft. wide, and 12 to 15 ft. high, of a reef of dense, fine granular ferruginous quartz (quartzite), which is full of patches, and traversed by veins, some several inches in thickness, of micaceous iron ore, and shows also scattered specks of iron pyrites. Two other large reefs of a similar kind of quartz, but rather more dense and somewhat calcareous, traverse greenstone rock in the same line of strike—N. 20° W., the one on the west, the other on the east side of the main branch of the Yudanamutana Creek, about 30 chains south from whim-shaft, on main lode. Both are thickly charged with micaceous iron in scales, veins, and patches, and contain also specks of iron pyrites, but the western one shows besides in every crevice and hollow, and in every fragment broken off, stains and thin powdery coatings of green carbonate of copper (rendering the mass in part similar to the poorer stone of the Blinman Mine), whilst in the detritus alongside occur frequently solid particles, and occasionally also larger nodular pieces of this ore. This reef stands wall-like out of the ground for five to six chains in length, the outcrops being on the top of the hill, bounding the creek, from 15 to 20 ft. thick, and rising to a height of above 20 feet, presenting quite a conspicuous feature.

Numerous craggy, brown-looking outcrops of a similar character, some even of greater others of less dimensions, are observable on the tops and slopes of the mountains and ranges all about the district. The most of them show copper indications; and small specimens of solid green and blue carbonate have occasionally been found on the surface—detritus round several of the number. These, as well as the large reef last mentioned, it would be advisable to prospect, for there is some probability of their either carrying payable copper ore themselves, or that between them and the adjoining rocks pockets or veins of that ore occur in depth. Touching the special geological nature of these outcrops, it is, in many instances, hardly possible to determine what kind of mineral deposit they represent. Some undoubtedly are true, well-defined lodes, that cross the country either in strike or in dip, or in both ways; others—generally those that appear as massive, craggy, highly-fractured protrusions of somewhat lenticular outline, lie within the strike of the rocks, as the beds curve round them, and form, therefore, layer-like masses; whilst a third variety—observable mostly on the crests of ranges, represent, as it were, bands or narrow zones across the strike of the rocks, highly silicified and impregnated with iron ore, for the lines of stratification of the rocks are in places clearly traceable through them. Considering their mode of origin, both this and the previously-noticed variety are, perhaps, products of metamorphic action, exerted by the neighbouring greenstone. The quartz, as was noticed at another place, bears on account of its minutely granular textnre, splintery fracture, and compactness, the greatest resemblance to the true sedimentary quartzite, which in massive beds is frequently found alternating with slates, sandstones, &c., near Mount Searle, Beltana, Wilpena, and other parts of the northern mountain region. However, it must be remarked that in many parts of Victoria, and more especially in those occupied by Upper Silurian rocks metamorphosed by contact with greenstone, there occur reefs of a similar kind of quartz, some of which have proved gold-bearing; and as the country of the district under notice is generally not unlike in lithological character to that of the Victorian districts referred to, and also to some of the New Zealand gold fields, I see no reason why gold should not exist, and be found both in the reefs and the creeks, if properly prospected for.

As regards the greenstone and associated metamorphic rocks, the following remarks may not be out of place. The greenstone—a massive rock, without any trace of stratification—occupies on the surface apparently only a limited area in the neighbourhood of the main copper lode, appearing in the bottoms of the creeks and gullies, and composing the low parts of the adjoining mountain spurs, overlaid in places by small patches of metamorphic slate, into which it sends ramifying veins. Judging, however, from the more or less strongly pronounced metamorphic character of the rocks miles away from the mine, more especially along the northern part of Yudanamutana range, it seems very probable that it lies over a large extent of country, more or less close beneath the surface, and may have even acted some part in the formation of that range. The main mass of the rock is essentially a fine to coarsely crystalline, sometimes porphyritic-looking aggregate of interlacing shining crystals of hornblende, of lighter and darker shades of green colour, with black mica in fine scales, filling all the interstices, and also appearing in streaks. Oligoclase felspar appears quite absent, but small irregular patches and grains of calcite are nearly always present. In a strictly lithological sense it is, therefore, not a true hornblende greenstone (diorite)—that term being in the foregoing description only used to indicate its appearance—but represents a micaceous amphibolite or hornblende rock, though nearly related to mica-diorite and the variety called ophite, described from certain metalliferous districts of the French Pyrenees. In some parts of its area it shows, however, a replacement of the mica by a pink felspar; but this being true orthoclase it becomes thereby transformed into syenite, whilst in others, especially in the ramifications, occurs a mixture of hornblende, mica, orthoclase, and quartz, representing syenite-granite. Portions of pure hornblende rock, without any mica or other accessory minerals, are also though very rarely observable. The main mass varies in colour, according to the predominance and colour of the component hornblende, from bright grass-green to blackish green and nearly black, and is generally hard and tough, where not affected by decomposition, which is in places the case for several feet beneath the surface, and renders the rock very loose and friable. Radiated or asbestiform crystallisations of bright green actinolite occur frequently in joints and hollows, and also, though more rarely, epodite in the same manner, whilst a tough, fibrous variety of hornblende, of yellowish or greenish white colour, resembling tremolite, is sometimes found in veins ramifying into the slate rocks. A characteristic feature of the rock, however—one also shown in the ophite of the Pryenees—is its richness in micaceous iron ore. This mineral is nearly everywhere observable in it in scales, patches, and irregular veins, from an inch to above a foot in thickness. Its shining scales, and larger and smaller pieces, are thickly scattered over the surface wherever the rock crops out, and in some of the rifts and gullies cutting into the latter pure masses of the ore may be observed from one to several cubic feet in size. In some places the rock is traversed by quite a network of small veins of finely granular quartz, full of micaceous iron, and generally showing grains of iron pyrites and copper stains. Thin veins of black mica, in large plates, are also here and there observable, and about six chains east of the last-mentioned open workings on main copper lode there occur a number of veins of white calcite, from a few inches to above a foot in thickness, which are densely filled with long, slender, prismatic crystals of blackish-green translucent actinolite, associated with some micaceous iron ore. Cake-like patches of earthy limestone, covering the surface of the rock near these veins, are, no doubt, products of their decomposition.

Touching the metamorphic rocks connected with the amphibolite, they are very irregular in strike and dip, and present a great number of the principal species known to science as, for instance, hornblende schist, actinolite schist, hornblende gneiss, mica schist, talc schist, chlorite schist, which latter shows frequently embedded crystals of magnetite, and in some places (near the mine offices) densely filled with short prismatic crystals of black hornblende. Besides these occur, further away from the intrusive rock, knotted micaceous slates, white-spotted, black, and grey slates (resembling chiastolite slate), striated fissile slate, cherty slates, and a number of other less characteristic varieties.

DALY AND SIR DOMINICK.—The Daly is about five and a half miles east-north-east from the mines just described. The workings consist of six or seven disconnected quarry-like excavations of larger or smaller size, and a small drive opened in a very strong mass of quartzite that runs at a strike of about north 45° west up a steep slope. The rocks of the district are of metamorphic character, presenting mica schist, hornblende schist, satiny, and spotted slates—in fact, the same varieties as observed near the Yudanamutana Mines.

STANLEY.—This lies about one and a half mile south-east of the Daly. The walls of the vein are not well defined. Four good lodes are described, and Mr. Ulrich considers that the southern side of the Yudanamutana range deserves the attention of the prospector. The Coraldana, Welcome, Mount Lyndhurst, Mount Burr, Beltana, Mount Emily, and Wirrawilka Mines are also referred to.

PRINCE ALFRED.—This mine is about 12 miles south-east of Yednalue station at the western base of a fine well wooded range; it is one of the most valuable Mr. Ulrich examined on his trip. The distribution of the copper ore is not, however, uniform, but varies in richness throughout the workings, which consist from the surface down of stopes—a chasm of three and a half chains in length. In the present main stopes the lode is very rich, and taken out for nearly 20 ft. in width, showing a remarkably even and well-defined footwall—the upper plane of a slate bed—but a defined hanging-wall is not discernable, as ore and calcite veins, though fewer and smaller, are still running in that direction. There is a very large heap of poor ore on grass, which as soon as the pumps are at work will be submitted to dressing operations, and, no doubt, pay well for the work.

The country Mr. Ulrich observes, in his concluding remarks, labours under three great defects—scarcity of mining timber, water, and, the most serious one, expensive and difficult communication with the seaboard. The remedying of the latter would in a great measure however tend to obviate the two former, for timber could then be more easily and cheaply procured, whilst if the cost of transport of ore or metal to the seaboard be reduced, the working of the mines below the water level and erection of pumping machinery might profitably be undertaken, and thereby the desideratum ensured necessary for dressing up to a payable standard the poorer kinds of ore, which are at present comparatively valueless and neglected.

* This ore, associated with some red oxide, was found at the mouth of the tunnel in the largest and richest masses obtained from the lode, as I have been since kindly informed by Capt. Terrell, of Wheal Blinman, who conducted the mine before it came to a standstill.

FOREIGN MINING AND METALLURGY.

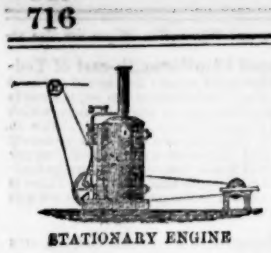
The demand for coal in France is larger than the production; apprehensions of scarcity seem to be increasing, and prices are acquiring additional firmness. The English market, having witnessed a more considerable and more rapid advance than that which has taken place in the North of France and Belgium, has been almost entirely abandoned by French consumers. The dearness of coal in England, of course, reacts upon the French and Belgian coal trades also. Meanwhile, most of the quotations given from time to time in French coal trade reports are, to a great extent, nominal, and the real prices present very considerable variations, according to the quantities which may be ordered and the periods which may be allowed for deliveries. The transport facilities afforded by the French railway companies to the French coal trade are for the present sufficient; whether this will be the case also in the winter months remains to be seen. The Graissessac (western basin) Coal Mines Company has been paying, since the 15th inst., a dividend of 5s. 3d. per share.

The French copper markets have exhibited a more quiet tone; at the same time, prices have not experienced any variation. Chilian in bars, delivered at Havre, are quoted nominally at Paris at 108*l.*; ingots ditto have realised 112*l.*; tough English, 113*l.*; and Corocoro minerals (pure standard), 110*l.* per ton. At Hamburg stocks of copper are greatly reduced, and prices are maintained in consequence with relative firmness. There has been no variation to record in copper at Rotterdam. The French tin markets still exhibit a firm tone; an advance of 1*l.* per ton has taken place in Straits, and one of 2*l.* per ton in English. At Paris, Banca, delivered at Havre or Paris, has made 171*l.* per ton; Straits ditto, 164*l.* per ton; and English, delivered at Havre, Paris, or Rouen, 163*l.* per ton. The German tin markets have exhibited a satisfactory tendency. At Rotterdam tin has been very firm by continuation; disposeable Banca has been dealt in at 96½ fls., and Billiton at 94 fls. to 94½ fls. Deliveries at the autumn sale are a good deal sought after, and considerable transactions have taken place in Banca at 95 fls. Billiton, under sail, is held at 93½ fls. to 94 fls. Lead has exhibited firmness on the French markets; an advance of 4s. per ton is, indeed, noted in French and English lead, and one of 8s. per ton in Spanish lead. French lead, delivered at Paris, has brought 20*l.* 12s.; Spanish, delivered at Havre, 20*l.* 8s.; and English, 20*l.* 4s. per ton. At Rotterdam, Spanish lead has brought 11⅞ fls.; Stolberg and Eschweiler, 12⅜ fls.; and German lead of various marks, 12 fls. to 12¼ fls. Advices from the French zinc markets report an advance of 8s. per ton in Silesian and other good marks, delivered at Havre. The German zinc markets have been firm, and the article has been the subject of important transactions.

Although there is no further advance to report in the French iron trade, it may be remarked that the markets have lost neither animation nor firmness. Producers do not appear to wish themselves for a further advance, and they are only anxious that quotations should be maintained at their present level. Higher prices can only arise from an exaggeration of rates upon other markets bringing to French works a superabundance of orders which they may find it impossible to execute. The demand is already sensibly in excess of the production, and ironmasters are obliged, in consequence, to refuse many contracts. The French foundries are working better than ever, notwithstanding the season, and prices are as good as possible. The exports of metallurgical products from the works in the neighbourhood of St. Etienne, to the United States, are acquiring a constant development in consequence of the exceptional demand and the high rates prevailing on the European markets.

In all the Belgian coal basins the extraction is pushed forward with all possible activity, but as working miners are scarce, notwithstanding the stoppage of the canals, the daily production is carried off by railways, and stocks are almost *nil*. Prices are maintained with great firmness, and a slightly upward tendency is even apparent. Coke is quoted at 1*l.* 5s. 8d. per ton, but this price is purely nominal, each consumer paying higher terms in proportion to the urgency of his requirements, while some firms have not been able to obtain at all the coke which they require, notwithstanding the exaggerated prices offered by them. A strike prevails in the Couchant de Mons, and has rather increased than diminished. It is complained by Belgian coalowners that the amount of useful work done by Belgian working miners diminishes in proportion as their wages are advanced; thus the position of the miners does not really appear to be improved by higher wages, since they only think of enjoying more ease and rest in proportion as they obtain more or less quickly the minimum sum required to assure their existence. The Kessales Colliery Company (at Jemappe) will pay, Aug. 1, a dividend of 1*l.* 12s. per share.

The Belgian iron trade presents very little change. The three principal features of the present state of affairs continue to be an excessive scarcity of raw materials, an excessive influx of orders, and an excessive firmness of prices. It is very difficult to procure pig, and such persons as require immediately merchants' iron or plates find it necessary to exceed in their offers even the exorbitant prices quoted. It is right, however, to make a distinction between Belgian metallurgy generally and the Belgian mechanical construction establishments, which are not so over done with orders as might be supposed. The dearness of raw materials, and the difficulty experienced in procuring them, have prevented Belgian mechanical firms from obtaining new orders. Rails continue very dear. The Acoz Forges Company has concluded a very important contract at 11*l.* per ton, with delivery in 1873. The same company has, however, still to deliver rails at much lower rates, and especially to the Great Central Belgian Railway, so that all the contracts which the concern has in hand are not so advantageous as that which it has just concluded. Old rails follow naturally the rise in new rails, and the difference remains fixed tolerably regularly between 2*l.* 8s. and 2*l.* 16s. per ton. This difference represents pretty closely the cost of re-handling or re-making the rails, even in these troubled times. The last quotations range between 8*l.* and 8*l.* 4s. per ton. A contract for a small lot of 47 tons of steel rails has just been let by the administration of the Belgian State Railways; the lowest tender was delivered by M. Dallemagne, of Sclessin—15*l.* 5s. 2d. per ton. Merchants' iron range in Belgium between 10*l.* and 10*l.* 16s. per ton for No. 1; some small transactions have been concluded at 11*l.* 4s., and even 12*l.* per ton. It was reported recently that a fusion was contemplated between the house of Durceaux and Co. and the house of Valentin and Bataille. This report is, however, not exactly correct. It is true that the house of Valentin and Bataille has decided to establish works at Villebroeck for the construction of iron bridges; but the house of Durieux and Co. has not entered into any arrangements in connection with the affair. The Prussian house of Harkort has obtained a contract for a bridge to be constructed at Vienna, over the Danube canal. Tenders for the work were recently invited by the Regularisation of the Danube Company. It is stated that the house of Harkort has ordered in Belgium the iron—or, at any rate, some of the iron required for the bridge.



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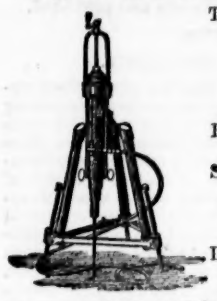

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SAVES £5 a day as compared with hand labour, independent of the enormous saving effected in the general expenses, such as PUMPING, VENTILATION, INTEREST OF CAPITAL, &c., from the fact of the "put-out" being increased four-fold.

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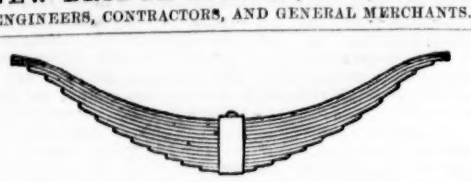

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RAILWAY SPRING COMPANY,

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Having purchased from the Trustee of the late Firm of W. Charles and Co. the extensive works, with the valuable and improved machinery, are prepared to execute orders for every description of

RAILWAY SPRINGS.

BAILEY and CO.'s Lightning Conductor and Turret Clock Makers, and Brassfounders to the British and Foreign Governments, Albion Works, Salford, Lancashire.

AND CHURCH CLOCKS,

PRICE £10.

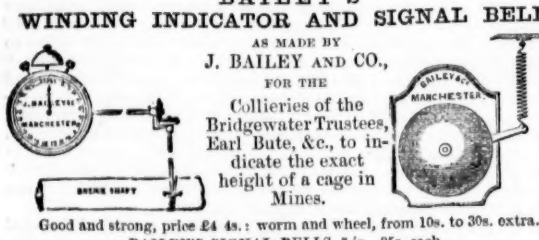
BAILEY'S WINDING INDICATOR AND SIGNAL BELLS

AS MADE BY

J. BAILEY AND CO.,

FOR THE

Collieries of the Bridgewater Trustees, Earl Bute, &c., to indicate the exact height of a cage in Mines.



Good and strong, price £4 4s.: worm and wheel, from 10s. to 30s. extra.

BAILEY'S SIGNAL BELLS, 7 in., 35s. each.

DITTO, EXTRA STRONG, 11 in., 90s. each.

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HEPBURNS' PUMP LEATHER WATERPROOF

By a special method of preparation, this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

I. AND T. HEPBURN AND SONS,

TANNERS AND CURRIERS, LEATHER MILLBANDS AND HOSE PIPE MANUFACTURERS,

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MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

PROTECTION FROM FIRE!

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NATIONAL INSTITUTION FOR DISEASES OF THE SKIN, PHYSICIAN: DR. BARR MEADOWS, 49, DOVER STREET, W.

Patients attend at 227, Gray's Inn-road, King's Cross, on Mondays and Thursdays; and at 10, Mitre-street, Aldgate, on Wednesdays and Fridays. Mornings at Ten; evenings from Six till Nine. Free to the necessitous poor; payment required from other applicants.

THOMAS ROBINSON, Honorary Secretary.

AWARDED TWENTY GOLD AND SILVER FIRST-CLASS PRIZE MEDALS.

IMMENSE SAVING OF LABOUR

TO MINERS, IRONMASTERS, MANUFACTURING CHEMISTS, RAILWAY COMPANIES, EMERY AND FLINT GRINDERS, McADAM ROAD MAKERS, &C., &C.

BLAKE'S PATENT STONE BREAKER,

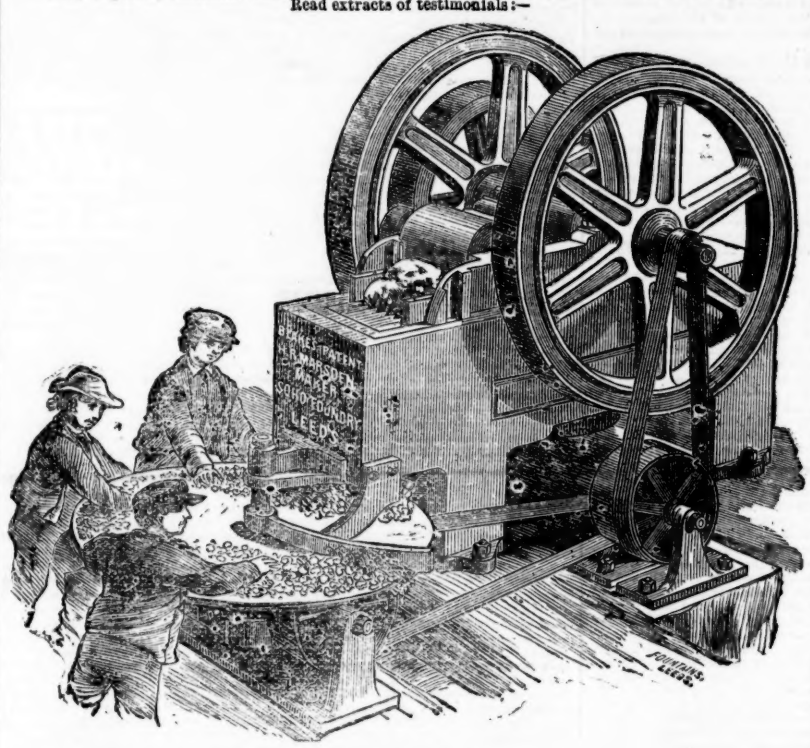
OR ORE-CRUSHING MACHINE,

FOR REDUCING TO SMALL FRAGMENTS ROCKS, ORES, AND MINERALS OF EVERY KIND.

This is the only machine that has proved a success. This machine was shown in full operation at the Royal Agricultural Society's Show at Manchester, and at the Highland Agricultural Society's Show at Edinburgh, where it broke 1½ ton of the hardest trap or whinstone in eight minutes, and was AWARDED TWO FIRST-CLASS SILVER MEDALS. It has also just received a SPECIAL GOLD MEDAL at Santiago, Chili.

It is rapidly making its way to all parts of the globe, being now in profitable use in California, Washoe, Lake Superior, Australia, Cuba, Chili, Brazil, and throughout the United States and England.

Read extracts of testimonials:—



The Parys Mines Company, Parys Mines, near Bangor, June 6.—We have had one of your stone breakers in use during the last 12 months, and Capt. Morcom reports most favourably as to its capabilities of crushing the materials to the required size, and its great economy in doing away with manual labour.

For the Parys Mining Company,
H. R. Marsden, Esq. JAMES WILLIAMS.

The Van Mining Company (Limited), Van Mines, Llandiloes, Feb. 6, 1871.—Our machine, a 10 by 7, is now breaking 180 tons of stone for the crusher every 24 hours. I may say, of all our machinery, that for simplicity of construction and dispatch in their work, they are equal to anything in the kingdom, but your stone breaker surpasses them all. W. WILLIAMS.
H. R. Marsden, Esq., Leeds.

Chacewater, Cornwall, Jan. 27, 1869.—I have great pleasure in stating that the patent stone breaker I bought of you some three years ago for mines in Chili, continues to do its work well, and gives great satisfaction. It crushes the hardest copper ore stone—put it through ½ inch size by horse power—with great ease. I can safely recommend it to all in want of a crusher; can be driven by steam, water, or horse power.
H. R. Marsden, Esq. JAMES PHILLIPS.

Terras Tin Mining Co. (Limited), near Grampound Road, Cornwall, Jan. 1871.—Blake's patent stone crusher, supplied by you to this company, is a fascination—the wonder and admiration of the neighbourhood. Its simplicity is also surprising. Persons visiting it when not at work have been heard to remark, "This can't be all of the machine." It will crush to a small size from 8 to 10 tons of very hard and tough elvan rock per hour; taking into its leviathan jaws pieces of the hardest rock, weighing 200 lbs. or more, masticating the same into small bits with as much apparent ease and pleasure as does a horse his mouthful of oats. On every 100 tons of the rock crushed by the machine there is a direct saving to the company of not less than £5 over the process of hand labour previously adopted by them, and the indirect saving much more, the machine being ever ready to perform the duties required of it. It breaks the stuff much smaller, and in form so fitted for the stamps, that they will put-verise one-third more in a given time than when performed by hand labour.
JOS. GILBERT MARTIEN.
H. R. Marsden, Esq., Leeds,

Welsh Gold Mining Company, Dolgelly.—The stone breaker does its work admirably, crushing the hardest stones and quartz. WM. DANIEL.

Ovoca, Ireland.—My crusher does its work most satisfactorily. It will break 10 tons of the hardest copper ore stone per hour.
WM. G. ROBERTS.

General Frémont's Mines, California.—The 15 by 7 in. machine effects a saving of the labour of about 30 men, or $75 per day. The high estimation in which we hold your invention is shown by the fact that Mr. Park has just ordered a third machine for this estate. SILAS WILLIAMS.

Your stone breaker gives us great satisfaction. We have broken 101 tons of Spanish pyrites with it in seven hours. EDWARD AARON,
H. R. Marsden, Esq. Weston, near Runcorn.

For illustrated catalogue, circulars, and testimonials, apply to—

H. R. MARSDEN, SOHO FOUNDRY,

MEADOW LANE, LEEDS,

ONLY MAKER IN THE UNITED KINGDOM.

THE DON ECONOMIC LUBRICATING OIL

IS 40 PER CENT. CHEAPER THAN THE ORDINARY KINDS.

MR. ALFRED HEWLETT, of the Wigan Coal and Iron Company, says:—"I have used it for two years, and find it to answer exceedingly well for lubricating purposes."

MR. NASMYTH, the Inventor of the Steam-Hammer, says:—"I am highly pleased with it as a most effective and durable lubricant, having remarkable properties in the way of setting free bearings which had got set fast."

In face of these and hundreds of other letters to the same effect, it is a MERE WASTE OF MONEY to use the dearer kinds for the engines and machinery of collieries and mines, numbers of which are now using the Don Oil instead.

Any company desirous of trying it before adopting it may do so at our risk and expense.

Circulars containing particulars sent on application.

PRICE—By the Ton of 253 Gallons, 2s. 6d. a gallon; by the Cask of 40 Gallons, 2s. 9d.

AGENTS WANTED AT HOME AND ABROAD.

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CHAS. PRICE AND CO.'S RANGOON ENGINE OIL,

AS SUPPLIED TO H.M. DOCKYARDS AND FLEET.

THIS OIL is suitable to every kind of Machinery. As a lubricant it is equal to the best Sperm or Lard Oil, while it possesses the great advantage of being entirely free from any principle which will corrode the metal bearings.

For particular kinds of Machinery, the Oil may be specially prepared of a consistency and character adapted to the nature of the work to be done.

"Chemical Laboratory, 7, Printing House-square, Blackfriars, April, 1869.

"I herewith certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is indeed calculated to protect metallic surfaces from oxidation.

"The lubricating power of this oil is equal to Sperm or Lard Oil.

"T. W. KEATES, F.C.S., &c. &c."

Every parcel of the Oil sent from the work bears the Trade Mark of the Firm.

LONDON: CASTLE BAYNARD, UPPER THAMES STREET.

WORKS: MILLWALL, POPLAR; and ERITH, KENT

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their office, 26, FLEET STREET, E.C., where all communications are requested to be addressed.—*July 27, 1872.*

SUPPLEMENT.

THE MINING JOURNAL,

Railway and Commercial Gazette.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

EXTRACTS FROM DICKER'S "AUSTRALIAN & LONDON GAZETTE."

LONDON, SATURDAY, JULY 27, 1872.

GOLD AND THE GOLD-FIELDS.

THE industry of gold mining has been pursued during the past month in a steady and satisfactory manner. There has been scarcely any novelty to record in the form of new discoveries, but on the other hand the accounts received from the various districts show that the yield of gold still continues exceedingly good, and is even better than it was last year, which was the most profitable since 1860. The total yield in 1871, though larger than that of 1870, was not equal in amount to the yield of years previous to 1870; but although for a long time past the number of miners has gradually decreased, as the men employed on the different fields have become engaged in more profitable or congenial pursuits, the decline in the yield of gold has been arrested, and at the present time the occupation is more payable in proportion to the miners employed than it was at any previous time within the last twelve years. This satisfactory position of the industry is without doubt attributable to the many valuable discoveries of new quartz-reefs that have occurred latterly, and the further development of existing lines of reefs which have been prospected for by new companies on ground through which, according to mining skill, it might be supposed the continuations of the existing reefs would run, and be found if searched for. The success that has attended the efforts of the companies formed and worked for the discovery of extensions of existing reefs has been very great, and has brought quartz-mining into such prominence that the yields from it now equal, if they do not exceed, those from the older system of alluvial diggings. The discovery of any new line of reef, or of a continuation of an existing reef, is a matter of much more importance to the community than the mere value of the gold contained in the claim of the fortunate finders, as it is but an introduction to many other discoveries of the same kind in its locality. The value of quartz-reefs here is constantly increasing in the estimation of the public as time shows that those already developed are of a much more extensive character than was formerly imagined, and that they are auriferous to a much greater depth than was previously thought of. So much has the value of this kind of property increased, that prospecting for reefs is now being carried on more extensively and energetically than ever, and capital is being expended in a very liberal manner wherever there is anything like a genuine chance of a return for the outlay. In and around Sandhurst, where the ground is certainly richer in a gold-producing point of view than any yet known in the world, prospecting is going on to an extraordinary extent, but not more so than those who understand and have faith in the district consider advisable. A very few of such prizes of claims as have within the last two years been developed in that neighbourhood will amply repay the money now being invested, and it is confidently expected that many such prizes will be the result of present endeavours. The success of the Great Extended Hustler's Tribute Company, which has been previously noted in summaries, still continues, their return for the fortnight ending 9th May being no less than 2562 oz. The reef in this company's claim, which was only struck last October, returned between the 20th of November, 1871, and the end of last month, from 4679 tons of stone, 34,353 oz. 8 dwt., or 1 ton 1 cwt. 0 qr. 3½ lb. of gold, of the value of 135,264*l*. A formidable, though most desirable, rival of this valuable claim has, however, now come forward in the Lazarus New Chum Company, which obtained for the fortnight ending 9th of May, a cake weighing 2443 oz. 10 dwt. of gold, and there was every reasonable prospect, from the appearance of their mine, of a continuance of such yields. The Great Extended Hustler's Reef Company, of which the company mentioned above is only a tribute, is also giving capital yields, and their shares, which last September were worth 7*l*. 7*s*., are now quoted at 13*l*. 10*s*. and 13*l*. 15*s*. The present market value of their claim is 390,000*l*. From nearly all the other quartz-mining districts the news is very encouraging, and there are prospects, from recent events, that Ballarat, which in the past has been so exceedingly rich in alluvial mines, will yet prove to be an extensive reefing country.

The mineral statistics of the Government Mining Department for the year 1871 contain some particulars important to residents of Victoria and persons at a distance who are interested in its welfare. The following information is gathered from the statistics. It is impossible to state what quantity of gold is raised in any year, but the following figures afford the best data on which estimates may be founded:—

—	1870.	1871.
	Oz.	Oz.
Exported	1,222,798	1,355,477
Raised	1,304,305	1,368,942
Purchased	1,244,910	1,290,844

The quantity exported was ascertained from Customs returns; mining registrars furnished the estimates of the quantity raised; and the banks gave returns of the quantity they had purchased. The mean number of miners employed during the year 1871 was 58,111, less by 2254 than the number employed during the year 1870. The mean numbers of alluvial miners and quartz miners on the gold-fields for the years 1870 and 1871 respectively were as follows:—

—	1870.	1871.
Alluvial Miners	43,870	41,963
Quartz Miners	16,486	16,148

The number of Chinese miners in 1871 was 15,669, more by 590 than in 1870. Not more than 87 Chinese were returned as quartz miners. Dividing the value of the total quantity of gold exported amongst the mean number of miners employed in alluvial mining and quartz mining, it appears that in 1871 the average was per man for the year 93*l*. 6*s*. 0·62*d*.; and for 1870, 81*l*. 0*s*. 6·46*d*. If the produce of alluviums be distinguished from the produce of quartz-reefs, it appears that in 1870 the average per man in alluvial mines was 61*l*. 8*s*. 5¾*d*., and in 1871, 65*l*. 17*s*. 11½*d*. In quartz mines the average per man was 133*l*. 3*s*. 11¾*d*. in 1870, and 164*l*. 10*s*. 4*d*. in 1871. It should be remembered, when considering these figures, that the miners are the holders of claims and leased lands of the estimated value of 12,275,046*l*., and of machinery worth 2,060,885*l*. They have earned these, and paid for them by their labour. Auriferous quartz is now obtained at great depths in some of the mines. The New North Clunes Company's shaft at Clunes is 900 feet in depth; the Extended Cross Company's shaft at Pleasant Creek is 880 feet; the Albion Company's shaft at Steiglitz is 866 feet; and the shaft of the Collmann and Tacchi Company at Sandhurst is 748 feet. The depth from the surface of the levels from which quartz is got in these mines ranges from 720 feet to 855 feet, and the yields from large parcels of quartz are good. That rich quartz is now raised in Victoria from depths considerably below the level of the sea is a fact of great importance and of high scientific interest. The mass of evidence accumulated by the department during the past thirteen years proves beyond doubt that the reefs are as rich at great depths as at the surface. The mining registrars and mining surveyors estimate the value of the lands held for gold-mining purposes in 1871 at 12,275,046*l*.—more by 4,590,868*l*. than in 1870. This great increase is explained by the development of quartz-mining in the Sandhurst and Pleasant Creek divisions. The total value of the gold exported from the date of the first discovery to the 31st December, 1871, at 4*l*. per ounce, was 163,019,221*l*.

The last quarterly balance-sheet of the New North Clunes Company (formed in 1857) shows the following figures:—Paid-up capital, 51,608*l*.; value of gold sold to date of balance-sheet, 427,241*l*. 12*s*. 3*d*.; credit balance at bank, 7366*l*. 16*s*. 11*d*. Under the head of expenditure, there is—Claim, 11,657*l*. 3*s*. 7*d*.; salaries, 3103*l*. 1*s*. 10*d*.; contracts, 78,860*l*. 13*s*. 8*d*.; labour,

(*Continued on page* 4.)

EXTRACTS FROM DICKER'S AUSTRALIAN AND LONDON GAZETTE.

THE MINING JOURNAL,
RAILWAY AND COMMERCIAL GAZETTE.
SATURDAY, JULY 27, 1872.

NOTICE.—The publication of the "Gazette" has been delayed in consequence of the late arrival of the Australian Mail, via Suez, and the breaking down of the New Zealand Mail.

LIST of the PRINCIPAL DIVIDENDS PAID in VICTORIA DURING the MONTH ending APRIL 20, 1872.

ALLUVIAL.

Names of Companies.	Amount per Share.	Date.	No. of Shares.	Dividend.
	£ s. d.			£ s. d.
Annabella, Huntly	0 1 0	Apr. 13	3,100	155 0 0
Argyle, Linton's	0 4 0	,, 13	3,200	640 0 0
Band and Albion Consols, Ballarat ...	0 3 0	,, 6	22,450	3,367 10 0
Band of Hope, Maryborough	0 2 6	,, 6	6,000	750 0 0
Galatea, Scarsdale	0 5 0	Mar. 30	2,100	525 0 0
Gladstone, Maryborough	0 1 6	Apr. 20	6,000	450 0 0
Golden Lake, Springdallah	0 7 6	,, 6	4,400	1,650 0 0
Golden Stream, Scarsdale	0 10 0	,, 6	2,000	1,000 0 0
Haddon, Haddon	3 10 0	,, 13	64	224 0 0
North Albion, Sandhurst	0 0 9	,, 6	24,000	900 0 0
Seaham, Maryborough	0 3 0	,, 6	6,000	900 0 0
	0 4 0	,, 20		1,200 0 0
Try Again, Smythesdale	6 0 0	,, 20	23	138 0 0
				£11,899 10 0

QUARTZ.

	£ s. d.			£ s. d.
All Nations, Blackwood	55 0 0	Apr. 13	5	275 0 0
Annie Laurie, Blackwood	45 0 0	,, 13	4	180 0 0
Black Hill, Ballarat	0 5 0	,, 13	2,480	620 0 0
Central Garden Gully Tribute, Sandhurst	0 7 0	Mar. 30	2,000	700 0 0
	1 2 0	Apr. 13		2,200 0 0
	0 8 6	,, 20		850 0 0
Collman and Tacchi, Sandhurst ...	0 1 3	,, 6	24,000	1,500 0 0
Cornish United, Sandhurst	1 0 0	Mar. 30	800	800 0 0
Costerfield G. & A., Costerfield ...	0 10 0	Apr. 20	2,000	1,000 0 0
Franklin, Sandhurst	0 0 6	,, 6	24,000	600 0 0
G. G. Consolidated, Sandhurst ...	0 0 9	,, 13	49,000	1,837 10 0
Glengonner, Lauriston	0 2 0	,, 20	2,000	200 0 0
Golden Sovereign, Sandhurst	0 0 6	,, 6	24,000	600 0 0
Great Extended Hustler's, Sandhurst	0 2 6	,, 6	28,000	3,500 0 0
	0 1 6	,, 20		2,100 0 0
Great Extended Hustler's Tribute, Sandhurst	0 5 0	Mar. 30	28,000	7,000 0 0
	0 5 0	Apr. 13		7,000 0 0
G. V. Brooke, Sandhurst	3 0 0	Mar. 30	24	72 0 0
Imperial, Ballarat	0 10 0	,, 30	300	150 0 0
Kangaroo Flat Freehold, Sandhurst ...	2 0 0	,, 30	24	48 0 0
Lazarus New Chum, Sandhurst ...	0 1 0	,, 30	45,000	2,250 0 0
	0 1 0	Apr. 13		2,250 0 0
Long Tunnel, Stringer's Creek ...	2 0 0	,, 13	2,400	4,800 0 0
New Chum and Victoria, Sandhurst ...	0 0 6	,, 6	25,000	625 0 0
New Chum and Victoria Tribute, Sandhurst	1 15 0	,, 6	800	1,400 0 0
	1 10 0	,, 20		1,200 0 0
New Fear Not, Daylesford	0 1 0	Mar. 30	3,600	180 0 0
New North Clunes, Clunes	1 0 0	Apr. 20	2,056	2,056 0 0
North Britain, Blackwood	40 0 0	Mar. 30	4	160 0 0
North Gipps Land, Walhalla	0 5 0	Apr. 13	2,400	600 0 0
North Whip, Sandhurst	0 0 3	Mar. 30	24,000	300 0 0
Old Chum, Sandhurst	0 0 6	,, 30	27,000	675 0 0
	0 0 6	Apr. 13		675 0 0
Pandora, Sandhurst	0 1 0	,, 13	28,000	1,400 0 0
Shenandoah Tribute, Sandhurst ...	0 0 9	Mar. 30	24,000	900 0 0
Speculation, Maldon	0 1 0	,, 30	6,000	300 0 0
Victoria Gold Mines, Sandhurst ...	0 1 0	,, 30	20,274	1,013 14 0
	0 1 0	Apr. 13		1,013 14 0
Walhalla, Gipps Land	0 1 0	,, 13	600	600 0 0
Young Chum, Sandhurst	0 0 6	,, 6	20,000	500 0 0
				54,130 18 0

Dividends paid by Alluvial Companies	11,899 10 0
,, ,, Quartz ,, ...	54,130 18 0
	£66,030 8 0

DURING the MONTH ending MAY 18, 1872.

ALLUVIAL.

Names of Companies.	Amount per Share.	Date.	No. of Shares.	Dividend.
	£ s. d.			£ s. d.
Annabella, Huntly	0 1 6	Apr. 27	3,100	232 10 0
Argyle, Linton's	0 5 0	May 11	3,200	800 0 0
Band and Albion Consols, Ballarat ...	0 6 0	Apr. 27	22,450	6,735 0 0
Band of Hope, Maryborough ...	0 2 0	May 4	6,000	600 0 0
Durham, Ballarat...	14 5 0	Apr. 27	40	570 0 0
Galatea, Scarsdale	0 5 0	,, 27	2,100	525 0 0
Gladstone, Maryborough	0 2 0	,, 27	6,000	600 0 0
	0 1 0	May 11		300 0 0
Golden Gate, Maryborough	0 2 0	,, 11	660	66 0 0
Golden Stream, Scarsdale	0 5 0	,, 4	2,000	500 0 0
Haddon, Haddon...	3 0 0	Apr. 27	64	192 0 0
	2 10 0	May 11		160 0 0
John Bright, Maryborough	0 1 0	,, 4	6,000	300 0 0
	0 1 0	,, 18		300 0 0
Prince of Wales, Sebastopol	0 2 0	Apr. 27	8,343	834 6 0
Seaham, Maryborough	0 2 0	May 4	6,000	600 0 0
	0 2 0	,, 18		600 0 0
Telegraph, Huntly	0 0 6	,, 4	24,000	600 0 0
				£14,514 16 0

QUARTZ.

	£ s. d.			£ s. d.
Champion, Sandhurst	0 0 2	May 11	24,000	200 0 0
Champion Tribute, Sandhurst... ...	0 0 3	,, 11	24,000	300 0 0
Cornish, Daylesford	0 2 6	,, 4	1,300	162 10 0
	0 5 0	,, 18		325 0 0
Cornish United, Daylesford	1 10 0	Apr. 27	800	1,200 0 0
G. G. Consolidated, Sandhurst ...	0 0 6	May 11	49,000	1,225 0 0
Glengonner, Lauriston	0 2 0	,, 4	2,000	200 0 0
Golden Fleece, Sandhurst	0 1 0	Apr. 27	20,000	1,000 0 0
	0 1 0	May 11		1,000 0 0
Great Extended Hustler's, Sandhurst...	0 1 6	,, 4	28,000	2,100 0 0
	0 1 6	,, 18		2,100 0 0
Great Extended Hustler's Tribute, No. 1, Sandhurst...	0 6 0	Apr. 27	28,000	8,400 0 0
	0 6 0	May 11		8,400 0 0
Iron Bark, Sandhurst	0 1 0	Apr. 27	9,000	450 0 0
Lazarus New Chum, Sandhurst ...	0 2 0	,, 27	45,000	4,500 0 0
	0 3 9	May 11		8,437 10 0
Long Tunnel, Stringer's Creek ...	2 10 0	,, 11	2,400	6,000 0 0
New Caledonian, Castlemaine... ...	0 0 6	,, 18	24,000	600 0 0
New Chum & Victoria, Sandhurst ...	0 0 6	,, 4	25,000	625 0 0
	0 0 6	,, 18		625 0 0
New Chum & Victoria Tribute, Sandhurst	2 5 0	,, 18	800	1,800 0 0
New Fear Not, Daylesford	0 1 0	Apr. 27	3,600	180 0 0
New North Clunes, Clunes	4 0 0	May 4	2,056	8,224 0 0
North Cross Reef, Pleasant Creek ...	0 14 0	,, 18	10,000	7,000 0 0
North Gipp's Land, Walhalla	0 5 0	,, 4	2,400	600 0 0

QUARTZ—*continued.*

Names of Companies.	Amount per Share.	Date.	No. of Shares.	Dividend.
	£ s. d.			£ s. d.
Old Chum, Sandhurst	0 0 6	Apr. 27	27,000	675 0 0
Pioneer (Koch's), Sandhurst	0 1 0	May 11	30,000	1,500 0 0
Rose of Denmark, Sandhurst	0 0 6	,, 18	24,000	600 0 0
Shenandoah, Sandhurst	0 1 0	,, 18	32,000	1,600 0 0
Walhalla, Gipp's Land	1 10 0	,, 11	600	900 0 0
White's Freehold, No. 1, Sandhurst ...	0 0 3	,, 18	24,000	300 0 0
Victoria Gold Mines, Sandhurst ...	0 1 0	,, 18	20,274	1,013 14 0
				£72,242 14 0

Dividends paid by Alluvial Mining Companies	14,514 16 0
,, ,, ,, Quartz ,, ,, ...	72,242 14 0
	£86,757 10 0

VICTORIAN MINES.

WINTER'S FREEHOLD GOLD MINING COMPANY, LIMITED, BALLARAT, *May 21st*, 1872.—*Re* CONSOLS.—I mentioned in my last that we had obtained an *ex parte* injunction to restrain the Consols from working the Smythsdale Road intersecting the freehold. On 13th inst. the Consols moved to set the injunction aside. After some time a consent order was signed by the judge. From the copy I now forward, you will perceive we agreed to suspend the injunction, provided the Consols admitted trespass, and waived the question of the Attorney-General. Our surveyors are now engaged at No. 3 Consols surveying the amount of the encroachment, but will not have a plan complete until to-morrow. By the terms of the consent order, No. 3 Consols is now worked under the supervision of our mine manager, and all gold obtained is lodged to the credit of the Prothonotary of the Supreme Court, to abide the result of the action. We are bound to go to trial this sittings of the Court, but as our case is at the bottom of the list, I do not anticipate it will come on until next term. The case will turn on one point, "Is the freeholder legally seized of the roadway abutting on the freehold?" The Consols having admitted the trespass, it will simply be a matter for argument. The Consols have shown signs of a wish to compromise, and our law committee meet on 25th inst. to discuss the matter. If they are at all reasonable, and desirous of settling the matter, it can easily be arranged, as the directors of this company are much averse to spending money in law.

Mine Manager's Report on Disputed Gutter.—"The Consols have worked a long piece of the disputed gutter. From what I could see of it, it averages about 40 feet wide; it is a nice looking gutter, and very easily worked. In consequence of no work having been done for a considerable time, the bottoms have risen up, and the face of the drives fallen down, so that I could not see the wash properly. I am of opinion that the gutter will soon run out of the Smythes Road into the company's property on the north side, which will settle all disputes."

Mine Report.—No. 1 Shaft.—You will see by the gold report that the yields are improving; to the east and west of the drive from No. 5 rise, ground of a payable character has been struck, and stretching away towards No. 4 rise; a drive in payable wash has also been started from No. 6 rise. In the south drive, the ground is not so hard, and the contractors are making better progress. The bore in the drive east of the south drive was stopped when up 28 feet, there being no chance of it going through.

No. 2 Shaft.—No change to report.

Gold Report—No. 1 Shaft.

1872.		oz.	dwt.	oz.	dwt.
April 24	Yield	14	6		
,, 25	...	22	12		
,, 26	...	29	8		
,, 27	...	29	11		
,, 29	...	17	17		
,, 30	...	28	12		
May 1	...	13	6		
,, 2	...	29	18		
,, 3	...	36	19		
,, 4	...	25	9		
,, 6	...	30	14		
,, 7	...	38	11		
,, 8	...	41	4		
,, 9	...	29	5		
,, 10	...	17	15		
,, 11	...	26	10		
,, 13	...	20	0		
,, 14	...	30	3		
,, 15	...	26	12		
,, 16	...	19	1		
,, 17	...	22	4		
,, 18	...	18	8		
,, 20	...	15	9		
,, 21	...	29	4		
		612	19		

No. 2 Shaft.

1872.	oz.	dwt.	oz.	dwt.
April 25 ...	20	16		
May 2 ...	20	17		
,, 9 ...	28	6		
,, 16 ...	27	5		
			97	4
Total.			710	3

SPECIAL TELEGRAM.—*Anticipatory of the next mail, dated* GALLE, *July 12th*, 1872.

"Struck very rich ground—westwards.
Fortnight's yield, seven hundred and thirty ounces."

The above telegram obviously refers to a new discovery in that portion of the ground we are now working in the north-west, and in that respect the news is additionally favourable. The breaking into the continuation of the disputed gutter, which enters the freehold about its centre, is simply a question of a few days or weeks.

AUSTRALIAN AND NEW ZEALAND DIVIDEND GOLD MINES INVESTMENT COMPANY, *May 21st*, 1872.—*Progress Report.*—Since last mail purchases to the extent of 675*l.*, as per statement, have been made, leaving a balance of 814*l.* 12*s.* 6*d.* still to invest. I have been anxious to select shares most likely to return regular dividends and yet keep within your instructions as far as possible. I intended purchasing more Hercules and South New Moons at the quotations ruling during the month, but did not succeed. For the last twelve months, as you are aware, we have had a wonderfully different market for quartz mining than ever existed before, and I must admit that my notion of the valuation of stocks, generally, has not followed public opinion.

Koch's Pioneer Company, of which I have purchased 100 shares, is, I believe, a good investment; for, independent of the mine prospects, the receipts from public crushing alone pay fair dividends on present prices. The balance available shall be invested this month to the best of my judgment. The dividends this month are, Victoria Reef Gold Mines, 1*s.*; Rose of Denmark, 6*d.*; and Old Chum, 6*d.* per share.*

Additional purchases made:—100 Garden Gully United Company at 70*s.* - £350
100 Koch's Pioneer Company at 65*s.* - 325
£675

NORTH COSTERFIELD GOLD AND ANTIMONY MINING COMPANY.—*Mine Manager's Report.*—I have to report that in pursuance of the arrangements with the manager I have been engaged during the month in preparing for sinking the south shaft. The depth already reached is of great assistance to us, but still it required a good deal of fixing, and it has occupied more time than I expected to put it in order. I have had to

* NOTICE.—The first annual meeting of this company will be held in London, in about a fortnight; prior to which a copy of the balance-sheet will be forwarded to each shareholder.

EXTRACTS FROM DICKER'S AUSTRALIAN AND LONDON GAZETTE.

timber afresh from the surface, log up, &c., and shall be ready in a few days to commence sinking, for which tenders are invited. Pay sheet will go down at the end of the month. The old company continue to extend their levels towards us, following a good lode of antimony all the way, and their prospects in the deep ground give every assurance of permanent good returns, and I consider every foot they sink in the lode as proving the value of this mine. They are now at a depth of 530 feet, and have an immense extent of lode to work upwards. The yield of gold has not been good, but they rely for profit solely on the antimony.

[As will be seen from the mining report of the Costerfield Company, the yield of antimony for the month is 9 tons; just double any of the late returns, and we believe by far the largest return yet had.]

MARINER'S REEF (GOLD) QUARTZ MINING AND CRUSHING COMPANY.—*Mine Manager's Report.*—I have to report that Ellery & Co. are getting on fine. They have sunk 12 feet this week, making the total depth 297 feet. We are down on the top of the second plunger, and hope next week to get it cleared out of the shaft. Robson & Steele are still sinking on the Soldiers'; and Rogers & Son are sinking on the North Mariner's. During the month, ending to-day, we let a contract to Ellery & Co., to cut down the engine shaft from the 273 feet to the 550 feet level at 6*l.* per foot, contractors to provide timber and materials, tools, &c., at their own cost. They have sunk 24 feet, and nearly finished timbering it up. Total depth from brace 297 feet. The engine and pumps are working very well. We have two parties on tribute: Robson & Co. on Soldiers' Hill, and Rodgers & Co. on North Mariner's, but neither of them have anything payable. There has been nothing done in the adjoining leases that I am aware of since they were applied for.

The manager has recommended the continuation of the crosscut from the main shaft so as to cut the Soldiers' Reef, and the directors in the colony have the matter now under consideration.

ARGUS COMPANY, *May 20th.*—This company are raising paying stone. The Goldfinding Company cut very rich stone lately at the 380 feet level, west of the Argus Company's boundary. The stone is 2 feet 6 inches thick, and the gold of a very heavy description, many of the pieces weighing from 5 dwts. to 6 dwts.

ARGUS TRIBUTE COMPANY, *May 20th.*—The crosscut at 65 feet level is in 12 feet; in a few feet more expect striking the stone from which a fair prospect was got at 30 feet deep, the same having underlied west of shaft at that depth.

CENTRAL ENERGETIC, LAURISTON, *April 27th.*—Since last washing off I have finished repairing the old top level. This done, I commenced a rise within 15 feet of our south boundary, and commenced stoping. Where I am now crushing from, from the appearance of the stone and prospects I have washed, I should estimate the stone to yield about 7 dwts. Should this stone pay, there appears to be any quantity of it. I am taking about 3 feet. Since writing the above I have washed up; yield, 31 oz. from 54 tons.

COLLMANN AND TACCHI'S COMPANY, *May 20th.*—The cleaning off on Saturday, 4th instant, resulted in a yield of 273 oz. 15 dwts. amalgam, from about 150 tons. In consequence of accident to winding gear, and our inability to haul, crushing was suspended for four days, and we did not clean off on the 11th instant. 88 oz. of gold were obtained from the cleaning of the copper-plates. The tables at the crushing machine look very well this week, the stopes are still looking first-rate, also the spurs at back of No. 12 level. There is a very encouraging prospect at No. 6 level, where a spur 6 inches thick has been met with showing gold. The shaft has been sunk 1 foot and timbered 23 feet during the fortnight.

COLLMANN AND TACCHI'S EXTENDED TRIBUTE COMPANY, *May 21st.*—The shaft has been sunk 7 feet 6 inches for the fortnight, making a total of 307 feet 6 inches from the brace.

COSTERFIELD GOLD AND ANTIMONY COMPANY, *May 20th.*—During the past four weeks, 144 tons being crushed, 41 oz. 6 dwts. of gold; 94 tons of antimony ore were obtained. The 230 feet level is in 210 feet; lode small and nubbly. The shaft is down 110 feet below the 420 feet level; the lode is 15 inches wide, looks well, and in good ground.

HERCULES COMPANY, *May 21st.*—Since my last report we have sunk the shaft a farther depth of 10 feet, making a total depth of 78 feet from the plat; the water is increasing. The stone both in the level and backs is looking about the same as in my last report. The machinery is all in good working order. Yield for the fortnight, 176 oz. 5 dwt.

We (*Bendigo Advertiser*) visited the claim of the Hercules Company yesterday. The company is in 28,000 shares, 1*l.* per share, and the legal manager is Mr. E. J. Hartley. The claim is on the main Victoria Reef, between the Victoria Gold Mines Company and the Energetic Company, extending about 300 yards on the line of reef. The surface works comprise a crushing plant of thirty heads of stamps of the most approved pattern, driven by an engine 35 h. p., and capable of putting through 300 tons of stone per week; a winding and pumping engine of 15 h. p., capacious dams, tramways, and other appliances for economic working. The tailings are let to Deeble and Co. on a tribute of 17½ per cent., and the tributors save about 1¼ tons per week, worth, on an average, 2½ oz. per ton. The mine can be worked from two shafts—one near the south end, in which the pumping gear is fixed; the other near the centre of the claim is the one now used. As the Energetic Company drains the ground the pumping gear is not at present required. The main shaft is down 560 feet, and the company are sinking it deeper, preparatory to opening out a crosscut at the 560 feet level, in which stone is being broken by contract at 12*s.* per ton from a block of ground 190 by 40 in the south end of the claim. The reef is here of an amazing thickness—some 100 feet—but only about 3 feet is taken from the eastern face, as the main body is not payable. This block yielded about 400 tons last fortnight, which gave a cake of 176 oz. 5 dwts., or an average of 9 dwts. per ton. This is about the average of the Victoria Gold Mines Company, who are working the same run of stone, and it does not seem very likely that anything better will be obtained in the present workings. The level is about 60 feet east of the shaft, and extends from the junction of the company south, 194 feet to the face, which is 60 feet from the southern boundary. To the north, the level has been carried 150 feet, at which point the cap of the reef dips underfoot, consequently the level is not carried any farther. In the 440 feet level operations have been carried on prospecting for the gold bearing spurs worked by the Victoria Gold Mines Company, but the result has gone to show that the spurs are at lower level, as the cap has been discovered in the 440 feet level. Consequently these spurs will not be available for some time to come. The capabilities of the mine do not at present exceed 200 tons per week, and may even be less, according to the nature of the country; but should last fortnight's yield be maintained, the mine will pay very handsomely, as the stone is brought to grass for 12*s.* per ton, and the other expenses of the mine do not exceed—say 160*l.* per fortnight. Last fortnight the expenses were, for both items, 400*l.*; yield of gold in the same period, 650*l.*; profit, 250*l.* When the 560 feet level is carried in (which will be in about four months' time), the resources of the mine will be very largely increased, and the "returns" much handsomer.

HOPE WOOD'S POINT, *April 2nd.*—The stone raised during the week has shown rather better, but owing to delay in the carriage of new liners for stamper-boxes, it cannot all be crushed this week. The new tribute party commenced this morning on some dead work that has to be done before they can get out crushing stuff. The shaft has been sunk 2 ft. farther, making it 122 ft. below tunnel level. The country continues the same. *April 29th.*—The quartz crushed last week averaged better than any lately sent to the mill, viz., 49 oz. 4 dwt. from 73 tons. A small lot was crushed from No. 3 tribute, yield 11 oz. 9 dwt. The stampers will be kept going constantly during the next fortnight by the company and No. 3 tribute. The stope on new reef below the 300 ft. level is looking better, and the indications are in favour of the same run of stone going through to the tunnel. The spur of middle reef shows fair stone. The new shaft has been sunk 2 ft. further. *May 6th.*—All the men have been working the same stopes on the new reef during the past week. The stone in both places looks much the same as before. The lot of stone from No. 3 tribute is all crushed, and will be cleaned up to-day. The shaft has been sunk 2 ft. farther, and is now 156 ft. below the tunnel. One head, which keeps nearly vertical, now carries a little quartz.

THE NEW MOON COMPANY, *May 20th.*—This company is sinking the main shaft and raising stone from the old workings.

NORTH JOHNSON'S COMPANY, *May 20th.*—The last crushing of this company yielded 54 oz. 14 dwts. of gold, taken chiefly from the lower level. In driving north a large body of quartz has come in, showing a little gold, but improving as the level is extended towards the winze. Crushing will now be continued regularly.

NORTH SPECIMEN HILL, *April 27th.*—We are still sinking the southern shaft, also the shaft in the tunnel; in the latter some promising spurs have been met with.

OLD CHUM COMPANY.—We are informed by the manager of this company that a body of stone was struck recently in the eastern crosscut, at the 560 feet level, at about 69 feet from the shaft. From its position and the distance in, the mining manager believes it to be the reef. The company from the upper levels obtained 246 oz. during the month.

ROSE OF DENMARK, *April 23rd.*—Struck some exceedingly good gold-bearing stone in the shaft now being sunk at the end of No. 3 tunnel on Friday night last. Crushing commenced on Monday. The company purpose erecting machinery as the whim is not sufficient for the work.

THE VICTORIA REEF GOLD MINES COMPANY keeps up its dividend-paying character, and for the month have returns amounting to 595 oz.

NEW ZEALAND MINES.

THE SHOTOVER GOLD MINING COMPANY, *April 27th*, 1872.—The manager of the Shotover reports favourable changes in both drives on the deep level. In that towards the long drive boundary the lode met with recently has been cut through, and a very favourable change in the character of the surrounding country has set in. Instead of the comparative hard ground through which the men have been driving, fine easy working ground of a very dark character is now to hand, and the indications generally are very favourable for the existence of gold in any quartz which may be met with. In the other drive also very good working ground is now being gone through.

PRINCE IMPERIAL GOLD MINING COMPANY, *May 30th*, 1872.—Stoping vigorously on the No. 1 leader, back of the 100 feet lead, is being carried on with about the same success that has been current for the past two or three months. The ground now encasing the lode is somewhat hard, but still quartz is coming out fast; about 30 tons having been broken during the last fortnight, with several pounds of rich picked stone.

THE ALBION COMPANY, *April 27th*, 1872.—The Poverty and Charleston tributors' crushing is looking splendid; from 7 oz. to 8 oz. per ton expected.

THE IMPERIAL CROWN GOLD MINING COMPANY, *April 27th*, 1872.—Golden Hill tribute have crushed 15 tons for 28½ oz. retorted gold.

TOOKEY'S, *April 27th*, 1872.—Lowden's tribute, 25 tons gave 57¼ oz. gold.

CALEDONIAN GOLD MINING COMPANY, AUCKLAND, *27th April*, 1872.—The yield for the week is 696 oz. retorted gold. Mr. Severn, the gentleman in charge of tailings machinery, has been placed in command of the new battery of 40 heads, *vice* Mr. Laird. Crushed 5 tons stone from the new winze going down from the lowest level, and the result is 4 oz. 11 dwt. retorted gold. *27th April*, 1872.—Great excitement was visible here this morning in consequence of its being currently reported that good gold had been struck in the No. 1 lode (top level), but after some time had elapsed it was found that this was incorrect. The only new thing in connection with the mine was the confirmation of the telegram forwarded late last night. Your readers are aware that the company have had men at work in the bottom of the Hazlebank shaft, the purport of which was to drive into their own ground, and by that means interest the well-known Young American leader. A few feet of diving from the bottom of this shaft uncovered two veins underlaying to the main reef, one of about six inches, and the other fifteen inches; and in going through these, some stone was found in which gold was plainly visible; and again, last night, some more was taken out, but nothing very rich. The discovery of these two veins is the secret of the rise in the market, but as to their intrinsic value, so far, they are of little moment. It was intended to resume sinking last Monday. Men were sent below, but had done very little before a fresh supply of water was cut, which, of course, has put on one side the idea of sinking for the present. The lode going down the winze is not looking so promising as it did, but very shortly a trial of the stone is about to be made, and then some idea will be obtained as to its value.

May 4th, 1872.—The return that the managers have lodged with the Bank of New Zealand, as the result of this week's work, is very satisfactory, it being no less than 932 oz. retorted gold from their own battery, while 28 oz. 10 dwt. also came from Tararu, making a total of 960½ oz. retorted gold. With regard to the telegram forwarded last night, referring to the find of a new leader, or vein, it is substantially correct, for the manager reports in clearing out the drive, or No. 1 level, they came across a little gold between Nos. 1 and 2 winzes; and farther in the early part of the week, when the ground was settling down, new massive timber had to be put in at that particular place, and gouging away for the sole pieces, this vein was again uncovered, and good stone obtained therefrom. The specimen vein No. 1 still continues to yield rich specimens. The mine at the present moment is in a very queer way, but this is owing, not to any fault of Captain Richards, but to the want of powder and the generation of gas, caused, I suppose, by the disturbance of the ground; this latter being so bad that the low level cannot be entered, while the former has put an end to the whole of the contracts, which naturally brings the battery to a complete standstill.

May 8th, 1872.—The water has appeared at the bottom of the winze, which is being sunk from the bottom level, which, of course, prevents them from sinking any farther, and in consequence of this the manager has commenced to secure the ground by timbering. The depth of this winze is 40 feet, and this would open up a good block of ground, but whether it would be deep enough to pick up the run of gold is another question. At any rate, until the United Pumping Association drains them, no farther depth can be obtained. Some very good specimens were obtained during the night from the specimen vein, but I am of opinion that it is the last attempt, as working overhead it has run into the old mullock workings. For the supply of specimens for the future, the manager will have to uncover the small rich leader found a few days ago.

THE TOKATEA GOLD MINING COMPANY (*April 27th*, 1872) have commenced work at their own battery, and have now ten heads going night and day; the other four heads will be set to work as soon as a few alterations are made. The mine looks well, and gold is being got in the stopes and drives. In the low level the leader has swelled out to 5 feet wide, but rather jumbled; gold can be seen in the face, and when it makes together again, the men expect to get a good patch.

May 4th, 1872.—This company finished crushing at the New Zealand battery, and the amount sent down yesterday was 321 oz., which was far better than was expected. This makes the week's yield 761 oz., and the total in the bank is now 1960 oz. A dividend will be declared in the course of next week, but I have not heard the amount. The mine is looking as well as ever, and gold is being obtained in all the stopes and winzes. In the No. 3, or low level, the reef has widened to 3 feet, with gold all through the stone. The next crushing will be at their own battery, the Whakaroa, and will begin, I hear, on Monday.

May 11th, 1872.—The crushing now going on yields as well as any previous one. Only ten heads have been kept going, and about 84 tons per week are put through. The four-stamper battery is being altered, by having iron frames put in to carry the gratings, the old ones being wood, and always giving way. When this is done, the whole fourteen heads will be kept going night and day, and the battery will then crush about 120 tons per week. A large quantity of amalgam is on hand, which will be retorted on Monday. The mine continues to yield good crushing stone, although no great amount of specimens are met with. The No. 1 level is down 140 feet, and there is about 30 feet more to go before breaking into the drive. There is a great deal of water in this winze, although the

drive drains a large quantity. In No. 2 winze, which is down 60 feet, they have been obliged to leave off work, to bail the water, the surface drainings, since the recent rains, having been very great. In the No. 3 level good stone is taken out, although the reef is broken up at present, but is expected to make again immediately.

ALBURNIA GOLD MINING COMPANY, *May 4th*, 1872.—The Sons of Freedom reef, cut in the low tunnel, is fully 12 feet wide from wall to wall, and in consequence of the underlay of the lode being in a contrary direction to that of the tunnel, the footwall was intersected first; and it is well known that this portion of the lode is hardly worth the breaking down, which is borne out by the managers in various mines on the lode, and also in the Alburnia itself; for after they had passed through 8 feet, a distinct leader 4 feet wide came in and hugged the hanging wall, and in this leader was the first gold found. After passing the hanging wall a foot or two last night, they suddenly uncovered a branch vein several inches wide, running parallel with it, but without doubt an offshoot; and this is a very promising discovery, as it is full of soft, black dirt, and quartz impregnated with a variety of minerals, which peculiarity in a vein like this often forbodes the presence of the precious metal. In order to test this lode, the manager intends to open 10 feet north-east upon it; the vein near the hanging wall will be tested separate from the great body of the lode. The manager of this company lodged with the Bank of New Zealand 281 oz. retorted gold, the result of a crushing of 300 tons of dirt from the main lode, and the Star of the South leader; this latter, I am glad to say, is turning out very well. Nothing new to report since yesterday regarding the new lode in the low level tunnel, but opening out will commence as soon as ever air-pipes have been erected.

GOLDEN CROWN.—A general clean up for this company took place last night at the battery, after 100 tons stone had been crushed from a variety of places, both on the No. 2 and main lodes. I am sorry to say that the result was not very favourable, only 59 oz. retorted gold being obtained. On the other hand, the tributors are doing very well indeed, a large number of men being engaged upon the veins shooting from the footwall of main lode, and in consequence they mean to keep ten stampers continually going from this day forward. The number of tons crushed is 60, from which they got 157½ oz. retorted gold.

KURANUI GOLD MINING COMPANY, *April 27th*, 1872.—The fortnightly yield for this company was brought in this morning, after 280 tons had passed through for 173½ oz. retorted gold. Yesterday 3 cwt. of showy specimens were crushed, but these turned out awfully bad, upsetting the calculations of the manager and those in charge. The lode known as Barry's has been followed up to the Eureka boundary, in the 20 feet level, and worked out upwards for 100 feet, and the general average of the stone was 1 oz. to the ton, and this about to be tested at a farther depth. For this purpose a winze from the 20 to the 30 fathom level has been sunk; and between the two levels, an intermediate one is being formed, and it is expected that the run of gold will be found down here also.

GOLD AND THE GOLD FIELDS.

(Continued from page 1.)

36,727*l.* 10*s.* 4*d.*; charges, 53,293*l.* 10*s.* 5*d.*; plant, 24,691*l.* 12*s.* 7*d.*; dividends, 207,656*l.* Clunes Water Commission, 25,000*l.*

Berlin, which in former times was so prolific of large nuggets, has yielded another auriferous prize. Messrs. Murphy and Scott have been the fortunate finders of a lump of gold weighing 42 lb. 8 oz., the same party having on the previous day turned up a smaller bit of 10 oz. 10 dwt. Their claim is situate near Blow's store, on Christmas-flat, the depth of sinking being only 9 feet.

A nugget weighing 127 oz. is reported as having been found at Kitty's Lead, near Ballarat, 6 inches under the surface, on Thursday, the 16th inst., by one of a party of four men who have been working there for some time with varying success.—*Melbourne Argus.*

That gold mining on Bendigo, says the *Bendigo Advertiser*, is a profitable occupation, is very clearly proved by the large excess of dividends over calls for the month ending 10th May, the dividends amounting to 47,647*l.*, and the calls to 39,203*l.*, leaving a balance in favour of dividends of 8354*l.*, and as the calls are exceptionally heavy at the present time on account of the large number of progressive mines, the profits may reasonably be expected to be increased, as the mines one after the other get on the gold. The calls represent the cost of working the mines, but it must be remembered that a large portion of that cost is represented by machinery, an asset which is a good one, and as money spent in machinery cannot be looked on in the same light as money expended in deadwork, main drives, shafts, &c., the value of the machinery should be deducted from the calls and added to the dividends, by which the difference between them will be all the greater.

The North Costerfield Gold and Antimony Mining Company. No Liability. Costerfield, near Bendigo, Victoria, Australia.

Capital 50,000*l.* in 50,000 Shares of 1*l.* each.
Paid up 10*s.* per Share, viz.:—
20,000 Shares of 1*l.* each, 10*s.* per Share paid, = 10,000*l.* allotted in the Colony.
30,000 Shares of 1*l.* each, 10*s.* per Share paid, = 15,000*l.* to be allotted in England.

50,000 Shares. 25,000*l.* called up.

The London Agent has instructions to offer the above parcel of 30,000 Shares:—

2*s.* 6*d.* per Share to be paid on Application; 2*s.* 6*d.* on Allotment; and 5*s.* in Three Months after Allotment. The Balance, if required, in Calls not exceeding 1*s.* per Share per month.

It is estimated, however, that 10*s.* per Share will be quite sufficient for all purposes of the undertaking.

Directors in the Colony.

Robert Burrowes, Esq., M.L.A., Member of the Legislative Assembly for Sandhurst, Bendigo.

Thomson Moore, Esq., M.L.A., Member of the Legislative Assembly for Mandurang, Bendigo.

Samuel P. Lord, Esq., J.P., Melbourne.

D. A. Osborne, Esq., Melbourne.

Dr. Fitzgerald, Melbourne.

William Gardiner Sprigg, Esq., Melbourne.

London Agent.

Thomas Dicker, Esq. (formerly Editor and Proprietor of *Dicker's Mining Record*, Melbourne.)

Offices.

4, Royal Exchange Avenue, London, E.C.

The object of this Company is to work the extensive property known as the North Costerfield Mine, for both gold and antimony. Its area is 25 acres 2 roods and 4 perches, with a length on the course of the lode of 1613 feet.

The Mine adjoins the well-known Costerfield property. The lode runs between solid and well-defined walls, without fault or break, and *bears the reputation of being the finest Antimony lode in the world.—Vide* Report of J. Brache, Esq., Civil and Mining Engineer, late Superintendent of Mining Surveys to the Geological Department, Melbourne.

This Company is registered in Melbourne under the "No Liability" clause of the "Limited Liability" Act of the Colony of Victoria, which limits the amount to be called up to 1*l.* per Share.

Plans and prospectuses with the fullest information may be had, and samples of ore taken from both mines can be seen, upon application to the London Agent (who has personally inspected the lode), 4, Royal Exchange Avenue, London, E.C.

AUSTRALIAN & NEW ZEALAND DIVIDEND GOLD MINES INVESTMENT CO. (Limited).

No. 1, No. 2, and No. 3 SERIES.

Shares can be obtained in each of No. 1 and No. 2 Series at 5*s.* premium. Apply at 4, Royal Exchange Avenue, E.C.

No. 3 SERIES.—A small balance of these Shares to be had at par.

AUSTRALIAN AND NEW ZEALAND DIVIDEND PAYING AND PROGRESSIVE MINES.—Full and reliable information, with list of sound mines for investment, may be obtained on application to Thomas Dicker (late Editor and Proprietor of "Mining Record," Melbourne), 4, Royal Exchange Avenue, London, E.C.

DICKER'S AUSTRALIAN AND LONDON MINING AND GENERAL AGENCY.

4, ROYAL EXCHANGE AVENUE, LONDON, E.C.

List of Shares for sale in Australian and New Zealand Mines, under limited liability.

Mariner's Reef (Gold) Quartz Mining and Crushing Company.

The Winter's Freehold Gold Mining Company, Limited, Ballarat, Victoria.

Australian and New Zealand Dividend Gold Mines Investment Company, Limited, No. 1, No. 2, and No. 3 Series.

Golden Crown Gold Mining Company, Limited, Thames River, Auckland, N.Z.

The London and Thames River, N.Z., Golden Crown Company, Limited.

The Imperial Crown Gold Mining Company, Limited, Thames River, Auckland, N.Z

Albion Gold Mining Company, Thames River, Auckland, No. 3.

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